REPORT

OF THE

INDIAN DELEGATION TO CHINA

ON

AGRICULTURAL PLANNING & TECHNIQUES

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GOVERNMENT OF INDIA
MINISTRY OF FOOD & AGRICULTURE

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CONTENTS

Conversion Factors

1 Chih (or Chinese feet) . .	14·1 inches
1 bolt	40 yards
1 mou	0·1647 acres.
1 catty	1·1023 lbs.
1 tan	110·23 lbs.
1 yuan	Rs. 2
1 billion	1000 millions.
1 ton	2240 lbs.

CHAPTER I

INTRODUCTORY

In March, 1957, the Planning Commission felt it necessary to make a fresh assessment of requirements for trained personnel in the agricultural sector during the Second and Third Plan periods, as well as of arrangements for the training of such personnel. The Planning Commission accordingly set up a Committee on Agricultural Personnel, under the Government of India, Planning Commission, Resolution No. P.C. (IV)5(II)4/57, dated the 18th March, 1957, (Appendix I), with the following as members:—

Chairman

(1) Shri P. N. Thapar, I.C.S.,
Secretary,
Department of Agriculture,
Ministry of Food and Agriculture.

Members

(2) Shri B. R. Tandan, I.C.S.,
Secretary,
Ministry of Community Development.

(3) Sardar Nawab Singh, I.C.S.,
Adviser,
Programme Administration,
Planning Commission.

(4) Dr. M. S. Randhawa, I.C.S.,
Vice-President,
Indian Council of Agricultural Research.

(5) Shri L. P. Singh, I.C.S.,
Director,
Directorate of Manpower,
Ministry of Home Affairs.

(6) Shri G. G. Takle, I.F.S.,
Inspector General of Forests.

(7) Dr. B. N. Uppal,
Agricultural Commissioner.

(8) Dr. L. Sahay,
Animal Husbandry Commissioner.

(9) Dr. L. C. Sikka,
Dairy Development Adviser,
Department of Agriculture,
Ministry of Food and Agriculture.

(10) Dr. J. S. Patel,
Agricultural Adviser,
Ministry of Community Development.

(11) Shri Pitambar Pant,
Scientific and Technical Manpower Division,
Planning Commission.

Shri M. V. Krishnappa acted as leader of the delegation and Dr. S. R. Sen as member-Secretary. Shri L. C. Sayal, a staff member of the Ministry of Food & Agriculture, also accompanied the delegation.

Terms of reference.

1.2. The terms of reference drawn up by the delegation for its study were as follows:

(1) General planning and inter-relationship between the Planning Commission, the Ministries and the other Governmental Organizations in China.

(2) Agricultural planning including problems of techniques, fixation of targets, etc.

(3) Methods of (a) implementation of agricultural plan, (b) agricultural extension, and (c) intensive cultivation.

(4) Incentives given to farmers (a) through price support and/or parity between industrial and agricultural products, (b) subsidies and/or tax relief, and (c) others.

(5) Agricultural research, education and training.

(6) Methods of collecting statistics of area and yield of important crops and data regarding area and yield of these crops for the seven years.

(7) Progress Reports and assessment of results of agricultural programmes included in the Plan.

1.3. Apart from these general items in which all the members were interested, Shri M. V. Krishnappa proposed to make a special study of the development of fisheries in China and Shri Tarlok Singh proposed to spend an additional week in China studying certain other aspects *viz.*, finance and credit, community development in a selected area and action in the field of unemployment.

1.4. The delegation arrived in Canton on the 28th July and reached Peking on the 30th July, 1956. The members of the delegation had discussions with specialists at headquarters during the first week of their stay in Peking. Thereafter they toured areas in eastern, central and northwestern China like Shanghai, Hangchow, Chingtao and Sian to visit Regional Planning Organizations, Agricultural Research and Training Institutes, Government Experimental Farms, Water Conservancy Works, Agricultural Techniques Popularization Stations, Machine Tractor Stations, co-operative farms, fish farms etc. They returned to Peking on the 14th August, had concluding discussions with the Chinese authorities from the 15th to 17th August and, with the exception of Shri Tarlok Singh, left Peking for India on the 18th August.

Liaison with the Cooperative Delegation.

1.5. About the time that the present delegation was in China, there was another Indian delegation comprising 7 members who had been deputed to make a special study of the development and role of co-operative institutions in

China. In many respects, the work of the co-operative delegation supplemented that of the present delegation. While the present delegation concentrated on studying the problems of agricultural planning and techniques at the planning, decision-making and administrative levels, the co-operative delegation made a special study of the operation right at the village level through co-operative institutions. Although a small proportion of peasants in China still practise individual farming on the traditional lines, the bulk of the farmers are now organized in co-operative farms. It is through these co-operative farms that the agricultural plan is now being sought to be almost wholly implemented. In view of this very intimate relation between agricultural planning and extension and the development of co-operative institutions in China, the agricultural and co-operative delegations maintained close liaison with each other during their stay in China. On problems of co-operation, the co-operative delegation will be submitting separately a detailed report. In the present report, therefore, only such general description of co-operative institutions in China has been given as is necessary for the understanding of the main subject studied by the present delegation.

1.6. In the following pages an attempt has been made first to give a general background of the situation. This is followed by detailed discussions on the various items which have been included in the terms of reference of the delegation. In view of the fact that the period at the disposal of the delegation was short, the delegation could not obviously go into as much detail as it would have liked to. But, by and large, it has tried to be as objective as possible.

1.7. Some members of the delegation have had the opportunity of visiting countries such as U.S.S.R., U.S.A., Japan and countries in eastern and western Europe. To an extent, the delegation has been able to draw upon their impressions of these countries in forming its conclusions.

Acknowledgement.

1.8. The members of the Delegation would like to take this opportunity to express their gratitude to the Prime Minister, the Minister for Agriculture and other Ministers, officials, interpreters and farmers in China who gave their time and advice ungrudgingly for making the visit of the Delegation as fruitful as possible. They would like to make a special mention here of the readiness of the officials of the various Government Departments as well as office bearers of the various co-operative farms that they visited to give them whatever information they sought, and even to put themselves to considerable inconvenience in compiling the data required by them and to assist them in every other way possible in their study of the problems of Chinese agriculture. Without their co-operation, it would have been impossible for the Delegation to carry out even

a small fraction of the task that was assigned to it by the Government of India. They would also like to thank the Government of China for treating them as Government guests and for giving them all necessary facilities for their work.

1.9. The delegation also wishes to place on record its appreciation of the assistance it has received from its member-Secretary, Dr. S. R. Sen, upon whom fell a considerable part of the delegation's work both during the visit to China and in the preparation of this report.

CHAPTER II

THE TOUR

2.1. We left New Delhi by air on the 26th July, 1956 and arrived in Hong Kong in the afternoon of the following day. On the 28th July at 10.15 A. M. we left Hong Kong by train for Canton.

The Road to Canton.

2.2. The road lay through a picturesque countryside somewhat like the east coast of India with large stretches of green paddy and jute fields interspersed with water-logged fens and chains of low hills. Brightly painted houses built in the traditional Chinese style nestled in ubiquitous bamboo groves and lent a local colour to the natural surroundings. A slight drizzle followed by a bright sun gave a silky texture to the landscape which reminded us of the beautiful Chinese paintings on silk that we had seen at exhibitions in Delhi. The Buddhist pagodas occasionally seen in the distance added to the picturesqueness of the scene and also reminded us of the great cultural bond that has existed between our two countries since very ancient times.

2.3. For all of us this was our first visit to China and hence even relatively minor things attracted our attention. But the centre of interest for us was the Chinese peasant and his fields. Our train passed through an area, the main agricultural products of which were paddy, jute, soya beans, sugarcane, peanut, sweet potatoes and a large variety of vegetables. Vegetables were grown mostly on the hill sides and in patches of land which were at a relatively high level. Near the big cities of Hong Kong and Canton there was as one would expect, more of market gardening than of crop production. We did not see much difference in the technique or intensity of cultivation between the Hong Kong side and the Canton side. The farmers working in the fields on both sides were obviously the same people. But there was one notable difference. While on the Hong Kong side almost all the farmers working in the rain had plastic rain coats, on the Canton side they were using coats made of bamboo leaves. On both sides the Chinese farmers appeared to be equally hardworking. The fields on both sides were full of small bunds where water was being conserved and wherever the land was a little undulating there was very careful terrace cultivation. Most of the ploughing was being done by buffaloes or by human labour. Some cattle could, no doubt, be seen, but their number was small and the quality seemed poor—more like the cattle of the wet monsoon regions of India *e.g.* Orissa or Andhra than like those of the drier regions of India *e.g.* Punjab or U.P.

2.4. The Chinese villages did not look very different from similar villages in India in the east coast or in Bengal. Near Hong Kong, however, there was a relatively greater preponderance of brick built houses. As we approached Canton, the standard of houses seemed to become some what poor. The average village people, their children, the markets, the shops, etc. also appeared to be not very dissimilar from what one sees in the east coast of India except that the Chinese villager seemed to be somewhat better clothed. The villages varied in size from 10 families to over 100 families. These, we learnt, are grouped into administrative units called *hsiangs* which usually comprise about 500 to 1,000 families, but are new tending to become larger through amalgamation.

2.5. It was at about 4. P.M. that we reached Canton. At the Canton Railway Station we were received by the Deputy Mayor of the City and several government officials. In the afternoon, we went out for a drive through the city of Canton. Canton is a very busy commercial city on the banks of the Pearl river which is a most important artery of trade in South China. The city has a population of 1·7 millions and it looks like any other city of South Asia. But there was one difference. We perceived that Canton had been passing through a process of levelling down. We did not see any sign either of conspicuous consumption or of destitution; but there were signs enough of a low standard of living. Women, equally with men, were seen drawing four-wheel carts.

A suburban co-operative farm.

2.6. Our main interest, however, was not in the city of Canton but in the neighbouring rural area. We, therefore, spent the whole of the following day, the 29th July, in visiting farms around Canton. In the morning we paid a visit to the Shan Yang Lee Co-operative farm which is situated in the suburbs of Canton. This farm has been named after a hero of Chinese history—Shan Yang Lee who led the fight against the British during the Great Peasant Rebellion of 1848 which has a place in Chinese history somewhat similar to the events of 1857 in India. The Shan Yang Lee Co-operative farm comprises a village of the same name. This is a fairly big village consisting of 603 families with a total of 3,500 people. The village is almost like a small town with houses built of bricks and stone and lanes and by lanes paved with stone slabs. It seemed to be a fairly old village. Most of the buildings are more than 30 or 40 years old. It appeared that before the Liberation this village was owned by several landlords. The biggest of them owning 50 mous of land was said to have fled to Hong Kong after the Liberation. Other landlords, we were told, had taken up occupations in the Canton City.

2.7. Some of the small farmers in the village had first formed a mutual aid team under the leadership of the

Communist Party in 1950. They set up an agricultural producers' co-operative society of the elementary type in 1954 and this was converted into a producers' cooperative of the advanced type or collective farm in 1955. The difference between a co-operative farm of the elementary type and that of the higher type is that in the former members get a dividend for the land pooled into the farm besides remuneration for their work, while in the latter there is no dividend for land and members get remuneration only for the labour that they contribute. While most of the land in the village has now been collectivised, each farmer has been given a private garden plot of one-fifth to one-third mou (1/30 to 1/18 acre approximately) on which he can produce vegetables and keep poultry and pigs. Cattle and the larger farm implements have been turned into common property after payment of full compensation to the owners. Individual farmers are, however, allowed to have their own pigs, chicken, fowls, ducks, etc. The collective farm also maintains some ducks and chicken.

2.8. There is a local retail shop which also buys certain minor produce; it is a branch shop of the Supply and Marketing Co-operative in Canton. Most of the produce of the farm which is surplus to the requirements of the village are sold either through the Supply and Marketing Co-operative or directly to the State through the grain purchase agency. Since the Shan Yang Lee farm is very near Canton City, it specialises in market gardening. Out of a total average of 2400 mous (395 acres), 1,300 mous (214 acres) are used for vegetable production and 1100 mous (181 acres) for the production of paddy. A variety of vegetables are grown of which onions, gourd, cucumber and mustard are the most important. The village has a community centre where we saw a store of paddy from which special shares are given as prizes to the most efficient workers on the farm. This Community Centre was formerly a market place. Now they have built a stage and a club house there. On the walls of the club various slogans and pictures of national leaders were displayed. In our final discussions which took place in this centre a number of men and women workers took active part. The accountant of the farm, a young girl, prompt and intelligent in her replies, was the first of the several competent accountants we met in other co-operatives during our tour.

2.9. One thing that impressed us was the cleanliness of this village in spite of the fact that most of the families were poor and had a large number of children. The health of the villagers seemed to be average, although there were a number of children who were suffering from skin and eye diseases. The use of night soil for manuring might have been a contributory cause of some of these diseases. But we found that the village authorities were taking active interest in providing medical facilities and improving the sanitation of the village. The village had two

health centres, one maintained by the Canton City Corporation and the other by the Kwantung Provincial Government. In both, western medicines were used though in one of them indigenous Chinese medicines were also available.

A new settlement of landless labourers.

2.10. In the afternoon we visited another collective farm which was of a very different type from the one that we visited in the morning. This farm was named Mo-Di-Shah. It was situated near a branch of the Pearl River at a distance of about 14 miles from Canton. While the village that we visited in the morning was an old established one with brick and stone houses and the members of the village co-operative had been agriculturists throughout their lives, the Mo-Di-Shah farm was a relatively new one and most of its present members had been fishermen living in boats on the river. Before Liberation, the village was owned by about 10 landlords of whom only two lived in the village while the others were absentee landlords. Most of the landlords had left the village but two of them remained as members of the collective farm. During land reforms the fishermen who had no land formerly were given land in this village and built small thatched houses along the bank of the river and the canal which flows out of it. As in the farm which we had visited earlier here also the first step was to set up a mutual aid team which had only 14 households as members out of a total of 100 in the village. In December 1954 an elementary co-operative society replaced the mutual aid team. This society had only 29 households as members. The remaining 71 families worked as individual farmers until December, 1955 when a collective farm was set up with all the hundred households as members. There was only one pucca building in the village which was used as store-house, office and community centre. It was in this house that the members of the Committee of management of the collective farm met us and explained to us the functions of the farm. In this farm it appeared women workers were playing an even more active role than in the farm we had visited earlier. The director of the farm was a young woman of 21 who struck us as a well-trained and capable person. She did not belong to the village itself. One of the vice-directors was a girl of about the same age and the agronomist of the farm was also a woman graduate of the Yunnan University aged about 25 years. The younger people seemed to be in evidence more than the older folk probably because they could be depended upon more for undertaking new tasks. Being somewhat distant from the city, this village specialized more in the production of paddy and sugarcane than in market gardening. The production of poultry, eggs, pigs and also fish formed an important part of the activities of this farm. Because the farm was situated on the bank of a river and a canal and a big bund had been built around it with about four lock gates on the canal, there was a good system of water conservancy which included both drainage and irrigation. The village

looked somewhat like a typical village in East Bengal with its water-ways and thatched cottages and fishing boats around the bund.

2.11. The system of technical assistance to farms in this area was described to us in the village. There was a Techniques Popularization Station in Canton to serve the entire suburban area. Because transport facilities were better in the suburban area, it was found more convenient to have a big station to serve all the 65 hsiangs in the area instead of a number of small stations to serve a few hsiangs each as was the practice elsewhere. We were informed that there were four experts in this central station who specialised in rice and industrial crops, 7 who specialised in vegetables and fruits, 10 in animal breeding, 4 in plant protection and 3 who arranged to provide necessary supplies of seeds, fertilizers and insecticides to farmers. We were told that there was a tractor brigade also.

The house of Chen Mong.

2.12. We paid a visit to the house of small peasant who had a family of four including his wife and three children. The house was a thatched cottage with walls made of reeds. The floor consisted of a wooden platform built along the bund right on the bank of the river. There were two small rooms in the cottage. The cottage was no doubt a poor one but was neat and clean. There was a bed in one corner with a mosquito curtain and a small writing table and a chair on which there were a few books. We were told that the peasant and his wife who were illiterate until recently were now attending a night school regularly. The night school was held usually after dinner from 7 P.M. to 10 P.M. and the teaching was provided by the teachers of the local middle school who came from a distance of about 2½ miles, four times a week. The peasant's wife appeared to be enthusiastic about the school and the improvements in their standard of living which had taken place since the land reform. They had no land of their own before land reforms. As a result of land reforms, they got about 4·8 mous (0:79 acres) of land which they had now voluntarily surrendered to the collective farm.

2.13. Our general impression was that members of the collective farm most of whom had been only landless labourers before land reforms were making good progress and went about their work with confidence.

The journey from Canton to Peking

2.14. The following morning we left Canton by air for Peking. The landscape from Canton to Peking reminded one of the landscape that one passes through when travelling by air from Trivandrum to the northern plains of Uttar Pradesh. The first stretch near Canton was fertile, lowlying, green paddy land criss-crossed with canals and rivers. Then followed a rather barren and hilly stretch which appeared to be dry and affected by considerable soil

erosion. There were more patches of red and brown than of green in this part of the country. When we apprcached Central China the scene changed to green mountains some of which were fairly high. After crossing these mountains we came to the basin of the Yangtze River which is somewhat like the basin of the rivers of Gangetic plain. But the Yangtze River is much higger than the Yamuna and the Ganges. The flat bed of the river looked somewhat like the lower stretches of the delta of the Ganges with its ever-changing course and large stretches of muddy water broken by numerous sand banks. This area is a very fertile agricultural tract and is also well known for its fisheries. But, equally, it is notorious for its floods. Large amounts of mud and sand resulting from severe soil erosion in the upper reaches of the river are carried forward and silt up the river bed and accentuate changes in the course of the river. We landed for a couple of hours at the city of Hankow which is one of the three sister cities of Wuhan. These three cities are well-known for their industries. As we approached Peking, the landscape gradually changed to something like the plains of western U.P.

Peking

2.15. We landed in Peking at about 5-30 P.M. and were received at the Peking Airport by Mr. Chai-tzu-Wei, Vice Minister of Agriculture, and a number of officers from the Ministries of Agriculture, Aquatic Products and Foreign Trade. Shri R. K. Nehru, the Indian Ambassador and officers of the Indian Embassy were also present to receive us.

2.16. We were put up at the famous Peking Hotel situated about 12 miles from the airport. We had several occasions to drive along this road during our visit and to see the extensive construction which was in progress. At a number of places, old buildings were being demolished for widening the road and many new office buildings, training institutions and dormitories were coming up. The city of Peking has a populatcn of about 3 million people but the traffic on the roads was much less than in any of the bigger cities of India. Most of the people either walked or travelled by bicycle or cycle-rickshaw or bus or tram. There were comparatively few cars to be seen on the road. It was cnly high Government officials, foreign diplomats and foreign guests who used cars. The Peking Hotel is adjacent to the famous 'Forbidden City' which used to be the palace of the Emperor and from our rooms we had a picturesque view of it. The Gate of Hevenly Peace through which one enters the 'Forbidden City' overlooks Peking's equivalent of the Red Square.

2.17. On the very evening of our arrival in Peking we were guests at a banquet given by the Minister for Agriculture of China—Mr. Liao Lu-yen. Among those present were Mr. Liu Jui-Lung and Mr. Chai Tzu-wei, Vice Ministers of Agriculture and several leading officials of the

Chinese Government. The Indian Ambassador, Shri R. K. Nehru, and the officers of the Indian Embassy as well as the members of the Indian Co-operative Delegation were also present.

2.18. The Delegation started discussions with the Chinese authorities on the morning of the following day, the 31st July, 1956. Detailed discussions lasting for almost 8 to 10 hours a day were held in Peking from the 31st July to the 4th August with experts of the Ministry of Agriculture, Ministry of Water Conservancy, Ministry of Food, State Statistical Bureau and the State Planning Commission. We also kept close contact with the Indian Co-operative Delegation who were engaged at the same time in discussions with Chinese experts on different aspects of co-operation.

2.19. While in Peking, the members of the Delegation had the opportunity of visiting some of the markets and the suburbs of the city and also saw something of the Peking opera and other cultural events. Although some of the major streets of the city were broad and clean, many of the residential areas had narrow lanes and by-lanes and Peking, like other large cities, is not without its slums. We were told that for each street or lane in the city there was a Street Committee and it was this Committee, which was responsible for the maintenance of the roads and their cleanliness. Each house-holder was required to clean the portion of the road facing his house. This had, no doubt, improved considerably the standard of cleanliness in the Chinese cities. We saw in several places big blocks of old buildings being broken down to make room for new buildings and broader roads. Considerable buildings activity was going on all around Peking. From what we saw, we felt that the face of Peking would change rapidly during the next few years. The markets of Peking, however, still retained some of their old world atmosphere. There were still the old shop signs and there were large number of shops selling Chinese curios and objets d' art. But we were told that most of the shops had already been converted into State private enterprises. There were fixed prices everywhere and the practice of bargaining which once prevailed had been ended altogether. People were soberly dressed, but not too austerely. We were told that even a year ago most persons wore blue but now there was evidence of greater variety and even relaxation.

2.20. On the 5th August which was a Sunday, we paid a visit to two palaces of the old Emperors of China—the Summer Palace which is about 12 miles outside the city and the Winter Palace which is just in the centre of the city. These palaces are magnificent examples of Chinese architecture, sculpture as well as of painting. They are located near large artificial lakes and have extensive parks around them. They have now been converted into holiday

resorts for the public. It appears that on holidays, the average citizens of Peking likes to go out on picnic with his family and friends. There are bus services from various places in the city to the important holiday resorts in the suburbs. Every Sunday, thousands of men and women go to these parts and in the Summer and Winter Palaces we found many holiday visitors.

The journey from Peking to Hangchow.

2.21. On the afternoon of the 5th August we left for Shanghai by train on the way to Hangchow. The railway station at Peking had an orderly appearance, but this was not a busy hour for rail traffic. We were given what are known as soft sleeping berths in two-berth compartments which compared well with our first class coupes. Every hour or so, an attendant would come to clean the gang-way as well as the floor and the walls of the compartment. The compartments were kept spotlessly clean. The food that was served to us also was good and after short intervals an attendant would come to each compartment and serve hot tea.

2.22. On the way from Peking to Shanghai, we saw large stretches of farm land on both sides of the rail road. Some crops had matured and were ripe for harvesting. There were a few others where the fields were relatively small, which were interspersed with ordinary village residences and where small teams of workers were working on the fields. These appeared to be some sort of co-operative farms.

2.23. On the way from Peking and Tientsin we found quite a few new factories under construction. In Tientsin we saw from the train a number of slums which were obviously remnants from the old days. But not far from these, neat blocks of workers' flats were also going up.

2.24. In this part of the country co-operative farming, especially of the higher type, seemed to have progressed very much. The fields were big and even in the rice area, small bunds so characteristic of southern China were conspicuous by their absence. August is the busy season for the Chinese farmer and we found teams of 15 to 20 farmers engaged in farming operations under the supervision of a team leader. They wore shorts, loose bush-shirts and straw hats. Few draught animals were to be seen. Wells and water wheels were worked by human labour. Loaded carts were also pulled by men but many of these had rubber tyres.

2.25. Our train crossed the Yangtze river by very early in the afternoon of the 6th August, the entire operation being carried out smoothly and efficiently. As we approached the coast, the pattern of cultivation seemed to become more like that around Canton. There were more of rice and vegetables and soon jute appeared to be the

predominant crop. Throughout the interesting journey from Peking to Shanghai, one small feature came to our attention repeatedly. There were small revolving ceiling fans in each compartment, but these fans could not be controlled by the passengers. The conductor of the train would run them only when the train stopped at a station and at other times only intermittently and for short periods of 10 or 15 minutes at a time. The weather was hot and sultry, but it seemed to be beyond the conductor's instructions to vary the set rule. Fortunately, when we returned from Shanghai the weather was cooler.

2.26. We reached Shanghai at 9-19 P.M. At the railway station, we were received by the Deputy Mayor of Shanghai and the officials of the Local Agricultural Department and the Planning Commission. Shri V. S. Chari, the Indian Consul General, was also present to receive us. Shanghai may be compared to the city of Calcutta but it is now more clean and appears less crowded. There seemed to be more social activity after sunset in Shanghai than in Peking. The following morning at about 6 A.M., we left for Hangchow by train. In our compartment, we had a large number of tourists from Uzbekistan in Russia. They were a friendly group. We saw similar tourists from Russia in some other places also.

2.27. Hangchow is considered to be one of the most beautiful cities in China. It is a fine holiday resort built around a large lake surrounded by hills and its natural settings reminded one of the saying in China that there was Heaven above and Hangchow and Suchow below on earth. In Hangchow, we were put up in newly built hotel facing the lake and providing all modern conveniences. Hangchow has a large number of Buddhist temples especially on the surrounding hills. Some of the statues of Buddha that we saw were really impressive.

2.28. On the morning of the 8th August, we went to see a cooperative farm of the advanced type at a distance of about 30 miles from Hangchow. We had to drive for about an hour by car and then travel by boat for about 4 miles to reach the spot. The canal along which we travelled by boat was one of the many which criss-crossed the area. On both sides of the canal, there were jute fields and bamboo groves with occasional patches of paddy and vegetable crops. Thatched houses nestling in some of the bamboo groves could be seen on both sides of the canal. The canal was full of boats plying both ways carrying people and merchandise. All in all, the scene reminded us very much of the deltaic areas of Bengal. The co-operative farm which we visited was called the Red Day Co-operative of the Shuang Ling hsiang. This Co-operative functioning in a typical Chinese village right in the interior and away from big cities was quite different from

A jute and paddy

the semi-urban co-operative farm that we had seen in the suburbs of Canton. It specialised in the production of two major crops *viz.*, paddy and jute. When we reached the village, we were given a warm welcome by the leading members of the co-operative farm headed by its Director Kian Kung Yusu. They took us to their cultural hall which was decorated with red banners, pictures of heroes of Chinese armed forces, industry and agriculture. The cultural hall, we were told, was formerly the house of a landlord. Like most of the other houses in the village it had mud walls and thatched roofs but was much bigger.

2.29. Full details regarding the working of this farm have been given in Chapter VII in connection with our general account of co-operative farming in China and hence need not be described here. We may note, however, that the general standard of cultivation in this farm seemed to be good. The figures supplied to us also showed a substantial increase in yields during the last 3 or 4 years.

2.30. In the afternoon, we returned to Hangchow by the same route that we had taken in the morning. On our return journey, we saw a number of boats carrying large quantities of night soil from the town to the villages. There was no doubt that the intensive use of night soil was contributing a great deal to the increase in production in the Chinese farm and it certainly seemed to us to be a matter of some urgency to develop methods of collecting and processing night soil so that it became free from bad odour and from disease carrying germs and therefore acceptable to the Indian peasant.

2.31. Besides our visit to the Red Day Farm, we had discussions in Hangchow with officials from the Planning Commission, the Agriculture Department, the Supply and Marketing Co-operative, Agricultural Bank and the Statistical Bureau of the Chekiang province. We left Hangchow for Shanghai early in the morning of the 9th August and reached Shanghai at about 10 A.M.

Meeting with a Shanghai Capitalist.

2.32. In the afternoon, two of us had the opportunity of meeting a Chinese gentleman who was formerly reckoned a leading capitalist entrepreneur of Shanghai and now spoke to us as a 'transformed' capitalist. He was originally an over-seas Chinese, Christian by religion and born in Australia. For the last 30 years he had been a share-holder and General Manager of a large textile manufacturing company which runs five cotton mills and several department stores in Shanghai. The company had a capital of 40 million Yuans (Rs. 8 crores) of which this gentleman himself held 1½ per cent. He had been educated as a textile engineer in America and had visited a number of foreign countries. He owns a very fine ville in one of the fashionable quarters of Shanghai. He received us

in the drawing room of his ville all by himself. He spoke fluent English and no one else was present at the meeting. He explained to us how the present co-operation between capitalists like himself and the Communist authorities came about. He first emphasised the point that the present authorities in China were following from the beginning an economic policy which was characterised by realism. They recognised that many of the capitalists as also the rich peasants were patriots and had fought in the past against imperialism and feudalism. They, therefore, tried to win over the capitalists and make use of their services instead of eliminating them. This, in the view of our host, was a wise step because otherwise China would have been deprived of the services of many able technicians and business managers and her industrial progress would have been retarded. Except for a few diehards, most of the capitalists had responded sincerely to this approach made by the Communists, for they were also patriots and had seen how China had suffered from the evils of capitalism and feudalism. Immediately before Liberation, the country had suffered from galloping inflation and corruption existed at all levels of administration. The present authorities were able to control inflation within a few months of assuming power and they were able to put an end to all necessary facilities to the industrialists who co-operated precedented discipline amongst the labourers. They gave all nccessary facilities to the industrialists who co-operated with them and assured them of adequate supplies of raw materials and a stable market for their products. All these had impressed our host who had originally many doubts about the ability as well as bonafides of the Communists. In fact many friends had advised him to clear out of Shanghai when the Communists were about to capture the city but when the Communists sent word to him and some other capitalists that their life and property would be safe, he decided to stay on. Several other Chinese industrialists followed the same course. The Communist authorities had shown themselves to be able and reasonable men much more realistic and less doctrinaire than had been anticipated by many. They had permitted capitalists who had decided to stay on to run their own business though the management of factories left behind by the capitalists who had emigrated was taken over. At first, the new state enterprises made mistakes but after a couple of years they began to work better than the privately run enterprises. The main reason, he said, was that workers themselves were much more willing to work harder and co-operate better in State-run factories than in private enterprises as they felt that in the State-run factories they were working for the country and no private individual was exploiting their labour. Now our host and his capitalist friends had decided to fall in line with the campaign for converting private enterprises into joint State-private enterprises. In these, the Government

would contribute some capital and appoint a manager or assistant manager and the factories would be organised more or less on the lines of State factories. From the short experience that our host had had so far, he found that this change-over had led to better relations between labour and management. Formerly, the Chinese capitalists were allowed whatever profits they could earn subject, of course, to Government control regarding prices, wages, etc., but there were only a few firms like his own firm which could give dividends. There were many firms which were running at a loss. From this year, the Government has decided to pay 5 per cent. dividend on all capital investment. All additional profits is to go to Government. Our host felt, however, that even this dividend might not last for long. If the dividend for land in co-operative farms disappears, the dividend for capital in industries would have also to go sooner or later. Developments in rural and urban sectors could not be very different in the long run. When the time comes, the capitalists would be quite prepared for the abolition of this dividend. All that they wanted was to have a phased transition which would give the capitalists reasonable time to adjust themselves to the new situation. The present Government is prepared to grant that. The Communist Party itself, at one time, envisaged that the transition to socialism might take three five-year plan periods but in the agricultural sphere they found that the people were prepared to go ahead at a much faster rate. On account of the general awareness which had come about, the principal capitalists in Shanghai had decided to convert their plants into joint State-private enterprises. Our host told us that he was content with his life and work in Shanghai. At one time he was amongst the richest men in Shanghai. But he himself did not require all the money that he earned. All the surplus money that he was saving was bound in the long run to spoil his children or grand children. But now, with the State taking the responsibility for their education and employment, he no longer worried about the future of his children. So far as he himself was concerned he earned much less no doubt, but his standard of living continued to be almost the same as before. He had a good house which he continued to possess and he got a salary of 1,000 Yuans (Rs. 2,000) from his factory which was sufficient for his day-to-day needs especially in view of the fact that there was no personal income-tax in China. In addition, he got a dividend of 5 per cent. for his share in the company which worked out to 30,000 Yuans (Rs. 60,000) per annum or 2,500 Yuans (Rs. 5,000) per month. He felt that this dividend would be stopped some day as the dividend for land in the co-operative farms had been. But he did not worry about that because he had been allowed time to adjust himself to the new situation. Moreover, he felt that China had been neglected for centuries and it was only right that every patriotic Chinese should be asked to con-

tribute as much as possible for the development of the country. He said that even over-seas Chinese had realised this and many of them were sending funds to China and some were also coming back to settle in China. The Government had been quite generous towards the over-seas Chinese. To them, they have guaranteed a dividend of 8 per cent. on their investment as well as all private property rights. Our host strongly felt that no Chinese whether he was a capitalist, a landlord, a government officer or a labourer, who had the real interest of China at heart could have any hesitation in giving his whole-hearted support to the present Government which had united and strengthened the country as never before. After all this was nationalism and not merely communism.

2.33. Our discussion with this gentleman gave us a picture of another side of China's development to which we listened with much interest. Naturally, we were not in a position to assess the precise significance of many matters upon which he touched and the various social, economic and political processes which have gone into the movement for the transformation of industry and commerce now being actively pursued in China.

A Play about a party man and a bourgeois technician.

2.34. On the same night we saw a Chinese modern play named 'By the side of the Yangtze River' in one of the leading theatres of Shanghai. It was an educational play produced by the workers' dramatic group from Wuhan. The theme of the play gave us some insight into the working of the Chinese industry and thus deserves mention here. The story was about a locomotive repair workshop which had been unable to fulfil its targets of production for the last six months. The chief engineer was an able technician but because he was not a member of the Communist Party and belonged to the former bourgeois class, he did not enjoy sufficient authority. The director and the deputy director were party men—both without technical knowledge but enthusiastic and hard-working. The director was willing to follow the operational plan prepared by the chief engineer, but the deputy director thought the real solution was political education and the creation of enthusiasm amongst the workers for harder work. Enthusiasm for work increased so much that even foremen started picking up nails and other waste material from the floor in their spare time, but this did not increase production and there was considerable frustration in the factory. As a result of a report received from the local Communist Party the Ministry of Railways sent the director of this factory to a similar factory in the north which had a good record of work. There the director went round every shop and spent a few days in having discussions not only with the manager of that factory but also with a Russian expert who worked there. Both of them impressed upon him the fact that mere enthusiasm or political education

was not enough but that the right kind of operational plan prepared by a technical man who knew the job had to be followed and that it was the duty of the director to give full support to the chief engineer even though he might not belong to the party. There was also need for enforcing more discipline by pointing out the faults of the officers and workers in a straight-forward manner without mincing matters and making meetings and discussions as business-like and short as possible. When the director came back to his factory he tried to enforce this. He gave more authority to the chief engineer and gave him full support in enforcing discipline and efficiency, even in relation to party members. For a time, this created resentment amongst a few workers of the factory, who were old soldiers of the Army of Liberation and privileged members of the party, because they thought it highly improper for a non-party man to exercise authority over them. But the secretary of the Communist Party's local branch intervened and gave the full support of the Party to the chief engineer and convinced the workers that it was in the interest of communism itself that the technical man should be given proper authority and responsibility. Moreover, formerly the director was in the habit of taking all decisions himself. Henceforward, there was more delegation of power and each section chief was told not to ask for instructions but to solve problems in his own way and on his own responsibility. This improved the efficiency of the factory in a short time and the factory was able to fulfil the target during the following month, which was a matter of joy for all concerned. This play gave us some indication of the important role played by the local Communist party in the management of factories, in maintaining workers' morale and also in reporting day to day developments to higher authorities. It also gave hints of changes in emphasis which may be expected as China goes forward in the direction of industrialisation. The stress on giving due responsibility and power to technical men and on subordinating the personal feelings and vanities of the Communist Party members was certainly significant and reminiscent of changes which have been observed in U.S.S.R. recently.

2.35. On the morning of 10th August, we paid a visit to a vegetable processing factory in Shanghai. This vegetable processing factory is one of eleven such factories which were set up in 1954 for meeting local requirements and for stabilising the economic condition of about 187 vegetable producing co-operative farms functioning in the neighbourhood of Shanghai. These 11 factories belong to the National Vegetable Corporation which is a State-owned organisation. This Corporation prepares, every year, an estimate of the quantities of different vegetables that may be required by the citizens of Shanghai in different periods of the year and submits it to the Agriculture Department in Shanghai. The Agriculture Department

prepares a plan on that basis and passes it on to the co-operative farms. It is on the basis of this plan that the co-operative farms plan their own production and make supplies available to the Vegetable Corporation. The Vegetable Corporation buys up all the vegetables that the farms offer to it in accordance with that plan and first offers these fresh vegetables for sale to the citizens of Shanghai in 32 markets set up in the City. Whatever fresh vegetables cannot be sold in these markets are then taken over by the 11 processing factories and manufactured into various types of preserves. In this way, the co-operative farms are assured a stable price and a stable market for their products; the citizens of Shanghai are assured sufficient supplies of fresh vegetables at a reasonable price and any surplus also gets utilised. The processed vegetables are partly exported to other parts of China and also outside the country, but a large part is again sold back to the citizens of Shanghai itself in winter and other seasons of the year when the supply of fresh vegetables declines. There are seven factories which process vegetables by the salting methods only while the other four further use the salted vegetables as the base for other methods of processing *viz.*, fermentation, dehydration and saucing. The factory that we visited was the biggest of these 11 and carried out all the four processes. It had 171 regular workers and 150 seasonal workers, 30 per cent. of the regular workers being skilled.

2.36. The factory was certainly quite an interesting organisation. The way vegetables were purchased from the co-operatives and partly sold as fresh vegetables and partly preserved seemed to us to be a very desirable method. It protected the co-operatives from loss and ensured them a steady and expanding market. It protected consumers from unduly high prices in the off-season and by preventing waste of fresh vegetables in the bumper season ensured supply of processed vegetables in the lean season.

2.37. We left Shanghai for Peking by train at 4.16 P.M. on the 10th of August and reached Peking the following evening. We left Peking for Sian on 12th August at 6.30 A.M. Sian is the capital of the Shensi Province which had been liberated much earlier and was the base for the early operations of the Communist Party. Shortly after we left Peking, the landscape changed and became more mountainous. After a flight of about an hour and a half we landed at Taiyuan which is being developed as an important industrial centre.

2.38. It was drizzling slightly when we reached Sian at about 10-30 A.M. It appeared that there had been heavy rain the night before. Roads in China are not too good outside the big cities and whenever there is heavy rain they become full of slush and mud. Sian was no exception and on the way from the airport to the hotel

Siam.

our car got bogged in the mud. About a score of people working on the road-side tried to lend us a hand and push the car but without any success. At last our car was pulled out of the mud by a lorry. We noticed, however, that a new wide road was being built from the aerodrome to the city of Sian and it seemed that that road would be a very modern one when completed.

2.39. Sian is situated at the centre of a long narrow valley surrounded by mountains. The valley itself is very fertile. From the historical point of view, Sian is an even more important city than Peking. It was the capital of China 11 times between the eleventh century before Christ to the tenth century after Christ during the Chao, Ching, Han and Tung Dynasties. It lost its importance when the Sungs came to power in the tenth century. Before that, the main trade routes of China ran through Sian towards Central Asia, Europe and India. Fa Hien and Yuan Chawang travelled along this route to India. In fact, Yuan Chawang came from Sian itself and his burial place can still be seen in the city. We visited the Great White Goose Pagoda which was built at Yuan Chawang's request by the then Chinese Emperor. We also visited the Shing Chao temple where Yuan Chawang is buried. From what we saw in these two places and also at the museum of Sian, we felt that in the old days Sian must have played a most important role as a link between India and China and the Buddhist influence was perhaps the strongest here. At the Great White Goose Pagoda, we saw sculptures and relief work suggestive of Indian influence. At the Shing Chao temple we saw a library where Chinese translations of Buddhist scriptures were being preserved. Great as Sian's past was, we also saw a new Sian rising from the ground and we noticed an enormous amount of public building activity all round the place. The Chinese authorities are now bringing to Sian a large number of their new industries as well as new technical colleges. The choice of Sian must no doubt be influenced by several considerations such as the presence of mineral resources, balanced regional development and its situation inland. It appears that the Government proposes not only to build some new industries in Sian, but also to shift some of the higher technological institutes from other places like Shanghai to Sian.

A Wheat *cum* Vegetable Co-operative Farm.

2.40. We spent an afternoon in the neighbourhood of Sian visiting some historical places and in the evening held discussions with the officers of the Provincial Planning Commission, the Agriculture Department, the Supply and Marketing Co-operative and the Agricultural Bank of the Shensi province. On the 13th August, we paid a visit to a co-operative farm at a distance of about 7 miles from the City. Although Sian is an old liberated area, co-operative farming here has a rather recent history. It was only in 1953 that

some of the peasants of the Tien Chia village, which we visited formed mutual aid teams. It was on the basis of the experience of these mutual aid teams that two co-operative farms of elementary type were set up in 1954 with a membership of 19 and 22 respectively. In 1955, the number increased to 8 co-operative farms of the elementary type comprising in all 150 households. Nine additional co-operatives were established before the year was out. By that time, each of the 17 villages in the area had one co-operative. In December 1955, however, all the four co-operative farms of the elementary type in the Tien Chia village were amalgamated to form a co-operative farm of the advanced type. Towards the end of January, 1956 all the 17 co-operatives decided to join into one co-operative farm of the advanced type. This co-operative farm is now called Hung Kung or Red Light Co-operative. Unlike the other farms that we had visited in China, this farm had 2 directors besides 5 vice-directors. One of the directors was looking after production. He was an experienced farmer belonging to the village itself. The other director looked after political education and matters of general policy. He did not belong to the village originally. He was formerly a labourer in a factory in Sian and moved to this village in 1954 with a view to organising co-operatives. He was also formerly the secretary of the local Communist Party. This gave the clue to the presence of two directors in a co-operative, a feature we had not come across elsewhere. At the time of our visit, the farm had 1,141 households, 5,890 members, 4,500 active workers, 10,960 mous of cultivated area and 28 mules. Unlike the other co-operative farms described earlier there were no private garden plots allotted to the members of this farm. The main reason given was that since, in this farm vegetables were the main produce there was no need for individual farmers to grow their own vegetables. They could buy all the vegetables that they required from the co-operative farm itself at 50 per cent. of the market price. On the whole, the farm seemed to be doing quite well. Most of the houses had mud walls and tiled roofs but there were quite a few which were fairly commodious caves dug in the loess or hill side. These cave dwellings were quite comfortable being cool in summer and warm in winter. We were told that Chairman Mao Tse-Tung himself used to live in a cave like this before Liberation. The roads and sanitary arrangements of the village were, however, of a poor standard. It appeared that the main emphasis was on production and social amenities were rather neglected.

2.41. On the morning of 14th August, we had a discussion with the Provincial People's Bank of Sian and in the afternoon at about 2-30 P.M. we left Sian by plane for Peking. The next three days in Peking were spent mostly in disscussions with the members of the Indian Co-operative Delegation who had returned from their trip in North-

east China. We had also discussions with the representatives of the Ministry of Finance on the system of agricultural tax, the Agricultural Bank on the credit Plan, the State. Statistical Bureau on Chinese statistics, North China Research Institute about agricultural research, education and extension, the Ministry of Food on the unified system of purchase and sale of foodgrains and the Ministry of Purchase of Farm Products regarding the purchase of cotton, jute and hemp, tea, tobacco and other farm products. We also visited a Technique Popularisation Station and a Machine Tractor Station which were very important features of the Chinese programme for agricultural development. A detailed account of these stations is given in Chapter IX.

Interview with the Prime Minister

2.42. At about 12.30 P.M. on 17th August, we were informed that Prime Minister Chou-en-Lai had kindly agreed to receive us and the Co-operative Delegation at 2 P.M. that day. The interview was held at a magnificent hall built by one of the Ming Emperors which was now being used for the Prime Minister's official receptions. Mr. Chou-en-Lai received all of us very cordially and, after the usual courtesies, we had a lively conversation which lasted about 2½ hours.

2.43. Welcoming us, the Prime Minister said that closer Indo-Chinese relation required frequent exchange of such delegations. He hoped that a Chinese agricultural delegation would be able to visit India soon. He said that visiting delegations always said only polite words of praise but words of praise were of no use to him. On the other hand, they might harm because they tended to make one complacent. He would rather welcome critical remarks which helped him to discover and correct short-comings. He pointed out that conditions in China and India were similar. Both were poor countries with rich potentialities. Both were liberated from imperialism only recently. Both had too many people on too little land. The development of China and India would have, therefore, to be necessarily different from that in western countries. The problems of China, India, Japan and Indonesia with their heavy pressure of population were indeed similar and these four countries should co-operate to help in one another's development.

2.44. He explained that the net increase of population in China was about 2% per annum. The net increase in agricultural output was currently 4 to 5% per annum. This was giving rise to a sense of apparent complacency in some quarters but that was a mistake. The mere fact that the rate of increase of agricultural production was outstripping the current rate of increase of population to a small extent did not mean that population could increase without any limit. Even if there were no problems of producing and distributing adequate quantities of foodstuffs,

increase in the number of children would necessitate that each family should receive proportionately higher income with every additional child simply to maintain its standard of living. But wages could not be raised to the necessary extent with the birth of every new child. After Liberation, and as a result of land reform there had been a substantial increase in per capita income in China. There was much greater security than ever before. Many people were, therefore, having too many children. One could see this if one visited Shanghai or even any village in China. The whole place teemed with children. This was not a very desirable development. Too many children meant that the health of the mother would be adversely affected and the children could not be given proper care and education. In the interest of the health of the mother and the education of the child, it was necessary that there should be family planning or birth control. He was personally strongly in favour of family planning but he emphasised that his reason was very different from that of, say, the French people. His reason for wanting family planning was to space the number of children suitably with a view to improving the health of the mothers and the education of the children. In China there was recently a growing demand for family planning. There was a strong group in the National Peoples' Congress who were pressing for family planning. Mr. Chou-en-Lai had himself received many letters, especially from women, pressing for a campaign for family planning. The doctors in China were, however, of divided opinion. There were some who thought birth control to be injurious to health. When a member of our delegation mentioned that the Government of India officially advocated family planning and that certain experiments had been undertaken to discover safe methods of contraception, Mr. Chou-en-Lai showed considerable interest. He said that he could send a delegation to India and another delegation to Japan to look into the various methods which were being tried. As soon as a good method of contraception was discovered, the Government of China would undertake a country-wide campaign for the adoption of family planning by the Chinese people. All of us felt that this was a very important statement of policy by the Prime Minister of China. For, until recently, Communist authorities everywhere including China have been saying that a large population is really no problem in a socialist society.

2.45. Mr. Chou-en-Lai went on to say that the heavy pressure of population in China meant that the development of agriculture at least for the present could not be based either on mechanisation or on large scale reclamation. In China, the cost of production in mechanised farms might well prove to be higher than the cost of production in non-mechanised farms where farmers worked with ordinary farm implements. The reason was that labour was still much cheaper in China. These big

State-owned mechanised farms when set up even with gift tractors were not, therefore, unmixed blessings. They were causing the State quite a lot of expenditure. Mr. Chou-en-Lai felt that tractors might be useful in North-Western China where there were large stretches of farm lands which were relatively dry and plain. But, on the hill-sides where there was terrace cultivation or in the south and the east where wet paddy fields predominated, tractors were not likely to be very helpful. Moreover, there was also the fuel problem to be considered. China did not possess enough petroleum even for her existing industries and transport, and if tractors were added, the problem of supply of fuel oil would become very difficult indeed. Therefore, China was not thinking in terms of using tractors or heavy agricultural machinery in the near future except for very special purposes. Similarly, China did not give very high priority to reclamation of new lands in the near future. Of course, there were large tracts of barren land in China of which about 1500 million mous (250 million acres) were considered to be cultivable. But reclamation of this land was a very costly affair. The cost of reclamation was about 50 Yuans per mou (Rs. 304 per acre). Even if it was proposed to reclaim only about 100 million mous (16.5 million acres) of land it would cost about 5000 million Yuans (Rs. 1,000 crores). In addition, new roads will have to be built, colonies put up and other types of capital investment undertaken. At the present stage, China could hardly afford to undertake this kind of investment. Besides, it was always a very difficult social problem to emigrate people to new areas. People were tied to their old places and developed habits which were very deeply rooted. If they were moved to new types of soil and climate, they found it very difficult to adjust. Reclamation of new lands and settlement of new colonies in those lands were, therefore, not at all easy problems. Possibly at a later stage, say in the third or fourth five-year plan, China might consider both the mechanisation of farms and reclamation of virgin lands on a fairly large scale. For the present, however, prospects for these were limited and she depended primarily on co-operative farming for increasing production per acre and improving the standard of living of the people. In China, the main question for the time being was increase of production per acre and this she proposed to do largely through better utilisation of her man-power and animal power. This was the main principle on which the First Five Year Plan had been formulated. They were depending primarily on co-operative farming for the mobilisation of the local resources and the energies of the farmers although the Government was also investing quite large sums of money in agriculture.

2.46. Mr. Chou-en-Lai said that it would be wrong to think that whatever the Chinese Government was doing was correct. He often felt that they were making many

mistakes. For example, the Agriculture Ministry had been enthusiastic about popularising the use of a new type of double-share double-wheel plough all over the country. Until recently these ploughs were unfamiliar to farmers and there were only 150,000 such ploughs in use. The Agriculture Ministry wanted to introduce as many as 5 million ploughs. The Government considered the proposal to be too ambitious and cut the figure down to 2½ millions. This year the Ministry had sold actually 1 million ploughs and co-operatives in their enthusiasm. purchased these ploughs even in places where they were completely unworkable. They found that these ploughs were no good for terrace cultivation. They were also unsuitable for paddy lands, especially in the south where buffaloes were used to draw ploughs. The result was that many farms which had purchased these ploughs had just no use for them. This was tending to act as a damper on the enthusiasm of the farmers. The Government had, therefore, to buy back all the ploughs which were sold in areas for which they were unsuitable. This showed that mere enthusiasm was not enough and that careful experimentation in different areas under different conditions must precede the introduction of any new implements or techniques.

2.47. One of the members of our delegation asked Mr. Chou-en-Lai his views in regard to the relative merits of big and small co-operative farms in a context where the emphasis was on intensive cultivation by human and animal power and not on mechanisation. We had noticed that in some parts of China an emphasis was being put on combining small co-operative farms into much bigger co-operative farms. If this was done with a view to introducing big machines and tractors, as in Russia, that was quite understandable. Since, however, there was no question of introducing mechanisation in the near future in China, he felt that from the organisational point of view, a big co-operative farm which tried to control a large number of workers, perhaps could not be really so much more efficient than the small co-operative farm as was being represented. In fact, there was a possibility that this might lead to a lack of initiative on the part of individual workers and working teams and hence be detrimental to efficiency. Mr. Chou-en-Lai admitted that the question whether big or small co-operative farms were desirable under the Chinese conditions had not yet been solved. The problem was being carefully studied by experts. There were some enthusiasts who wanted, no doubt, bigger and bigger co-operative farms and in fact one of the important members of the People's Congress had organised a big co-operatitive farm comprising of as many as 5,000 households and 30,000 people. Mr. Chou-en-Lai himself felt, however, that the management of such a giant co-operative farm should be even more difficult than the

management of the Anshan Iron and Steel Factory which might be big but depended primarily on a large number of machines and not on so many men. In fact, he himself had sent a team to look into this farm and find out how far such a big co-operative farm could be really efficient. He was told that this particular co-operative farm was working satisfactorily because there was a joint water conservancy project which unified the people. But still he had serious doubts. He felt that in certain areas, especially terrace cultivation areas or paddy cultivation areas, smaller farms would be more efficient, although there were other areas, say, wheat growing areas, where perhaps relatively bigger co-operative farms could have something in their favour. As regards the effect of large co-operatives on individual initiative and sense of participation, Mr. Chou-en-Lai said that the answer would depend on what was the real unifying force and what was the organisation in which the workers had to function. On this point his own ideas were somewhat different from the western concepts. According to western concepts—and here he appeared to refer to USSR—men became collectivised as a result of mechanisation, but it was his personal experience that men could be collectivised even without machines provided certain pre-conditions could be provided. In fact, this was his own experience with the Liberation Army. It was the utter poverty of the Chinese peasant which created the conditions that led to unity and collective action. As Chairman Mao Tse-Tung used to say it was the "rifle and rice" (and sometimes even rice was not available and they had to eat only milets) which were the unifying force for the Peoples' army. It was their utter poverty which made an increasing number of peasants join the Peoples' Army. It was their poverty which made them politically conscious and prepared them to accept discipline. He agreed, however, that we should always give due consideration to political and economic conditions. We must not ignore the fact that peasants were normally used to work individually or in small groups. At present agricultural co-operatives were not mechanised. Hence, it had not been possible to increase agricultural production as speedily as he would like it to. He hoped that a *via media* between collective enterprise and individual enterprise could be found in the system that they were trying to follow in China. In fact, their present policy was that co-operative farms should concentrate on producing only certain main crops like food-grains, cotton, jute, etc. Each co-operative farmer should have also a small plot of land of his own where he could produce anything he liked. Whatever was produced in the co-operative farm should be sold to the State while whatever was produced by the co-operative farmer in his own private plot could be sold for private consumption in the open market. This dual policy should be acceptable to the farmer and it was the simultaneous existence of State

purchase and an open market that was the sort of solution which he would suggest as a solution of the problem. This should help to collectivise agriculture and at the same time make full use of the individual initiative of the farmers for increasing production.

2.48. Mr. Chou-en-Lai emphasized the point that the task of changing the pattern of the society involved many complicated problems and our approach to these problems should not be theoretical or doctrinaire but should be realistic. We must proceed from step to step and should not try to jump over certain essential steps.

2.49. In reply to a question on the effects that the formation of co-operative farms on a large scale was likely to have on the employment problem, Mr. Chou-en-Lai said that the problem should be looked at from the point of view of two sectors and two periods. The two sectors were the villages and the cities and the two periods were the present and the future. So far as villages were concerned, in the short period lots of work had to be done. Apart from cultivation, water conservancy projects had to be undertaken, reservoirs and tanks had to be dug and roads had to be built. All these required a lot of labour and the formation of co-operative farms made some of these activities possible and absorbed a considerable amount of labour of the co-operative farmers. But this state of affairs obviously could not be expected to continue for a long time. Soon a stage was bound to come when all the water conservancy projects in the village would be finished, all the roads would be built, and then there would arise the problem of some surplus labour in the village. Steps have, therefore, to be taken during the interim period for the utilisation of this surplus labour for the production of agricultural bye-products. There was a good market for agricultural bye-products and if the surplus labour in the rural areas could be absorbed by developing these bye-product industries and in other subsidiary occupations in the villages, the problem could be solved to a considerable extent. Of course, during the same period if there was a certain amount of industralisation in the country that would also draw away a number of surplus labourers from the villages. He felt, however, that, by and large, most of the rural workers would have to be employed in the village itself. It was mainly the educated and trained workers who could migrate to the cities and find some employment there. So far as the cities were concerned, he said that at the moment there was very little unemployment particularly in comparison to what used to be in the past. Whatever unemployment could be seen in cities like Shanghai was due to the fact that certain private enterprises had suddenly closed down. The State enterprises had not dismissed a single labourer and were, in fact, trying to take on workers who had been thrown out of employment due to the closing down of private enterprises.

He said that, in Shanghai, out of a population of 6 million there were 200,000 capitalists and they gave employment to one million people. The Government had not only allowed these capitalists to exist and to continue their work but had also given them considerable help as they were interested in the continued employment of these 1 million workers. The new system of joint State-private enterprises, he hoped, would enable most of these people to do useful work for society without increasing the danger of capitalist exploitation. To the extent industries developed, there would be more jobs and that would solve some of the problems of the cities. Of course not all the unemployed could thus be absorbed. Some of the unemployed might require a period of training and this was not very easy to arrange. He pointed out, however, that in the First Five Year Plan of China there was need for 5 to 7 hundred thousand men for new industrial enterprises. In the Second Plan period, a much larger number of workers would be required for new enterprises. But here the main problem was that of training. If new enterprises and new jobs were created from the point of view of employment only and without proper study, it might not only disturb the carefully worked out balance between one industry and another, but might also upset the balance between agriculture and industry. A balance was also necessary between the town and the village. Mr. Chou-en-Lai, therefore, suggested careful research work on these problems. Once the right solutions in respect of family planning methods and approach was found, he did not envisage any serious difficulty about implementing it. He said that he got this confidence mainly from the fact that China had been able to organise her 500 million peasants in co-operative farms. He was conscious, nevertheless, that it was a very difficult job and it would not be before the fourth or fifth Five Year Plan that they would be able to stabilise the position. In fact, it would require at least 8 to 10 Five Year Plans before living standards of the Chinese people could be brought up to the same level as that of the western countries. He pointed out that technically China today was about 60 years behind the United States. China, therefore, wanted peace for the development of her agriculture and industry and for raising the standard of living of her people. For all this, China required friends like India who could help her to maintain peace and utilise that peace for the work of construction.

2.50. We utilised some of the spare time that we had during our last few days' stay in Peking to visit the Forbidden City, the Great Wall, Ming Tombs and the Temple of Heaven all depicting in one way or other the glories of old China. The Great Wall was as impressive to see as it was to read about. It has a history almost as old as that of China and it represented an attempt on the part of a settled agricultural population to protect itself from

frequent attacks by the nomadic tribes of the north and north-west. In fact it represented an interesting chapter in the history of the struggle between pastoral and agricultural types of civilisation. The wall is about 1700 miles long as the crow flies, but if one takes into account all its bends and turns the actual length may be as much as 3,000 miles. We made the trip from Peking to the Great Wall by car and the road passed through a country-side full of flourishing crops. The Great Wall itself is in a hilly area but the hill is not very wide and in the distance we could see the rolling pasture lands of Inner Mongolia, while behind us lay the green crop fields of Hopei province.

Memorial to Heaven.

2.51. The Temple of Heaven is a beautiful piece of architecture and is now the centre of an extensive park which is patronised to a considerable extent by the citizens of Peking and is also used for military exercises But it has some agricultural interest also. Whenever the crops failed in the old days, the emperors used to come to this temple to pray and to present memorials to Heaven for good rains and better crops. The Chinese emperors considered themselves to be the agents of Heaven on earth and hence whenever the rains failed and crops were adversely affected, they sought to try to propitiate Heaven with prayers and offerings. It may not be out of place to quote here from a "Memorial which was submitted to Heaven in this temple by the Emperor Tao Kwang.

> "Oh, alas! imperial Heaven, were not the world afflicted by extraordinary changes, I would not dare to present extraordinary services. But this year the drought is most unusual. Summer is past, and no rain has fallen. Not only do agriculture and human beings feel the dire calamity, but also beasts and insects, herbs and trees, almost cease to live. I, the Minister of Heaven am placed over mankind, and am responsible for keeping the world in order and tranquilizing the people".
>
> "Prostrate I beg imperial Heaven to pardon my ignorance and stupidity and to grant me self-renovation; for myriads of innocent people are involved by me, the One man. My sins are so numerous it is difficult to escape from them. Summer is past and autumn arrived; to wait longer will really be impossible. Knocking head, I pray imperial Heaven to hasten and confer gracious deliverance a speedy and divinely beneficial rain, to save the peoples' lives and in some degree redeem my iniquities. Oh, alas! imperial Heaven, be gracious to them. I am inexpressibly grieved, alarmed, and frightened. Reverently this memorial is presented."

2.52. The Temple of Heaven represented the traditional Chinese way of meeting crop failures, but modern

China, like—modern India, is seeking other ways. Great dams and reservoirs are being built, rivers are being tamed, new techniques of agriculture are being introduced and new social and economic institutions are bringing fresh vitality to be the rural people.

CHAPTER III

GENERAL BACKGROUND

3.1. China is a vast country about 3 times as large as India. Her population is about 600 millions or 1½ times that of India. To a casual observer China represents as much variety—geographical, climatic, social and economic as India does. It is, therefore, as hazardous to make any generalization about China as it is about India—especially if the period of study is short as ours was. Still it may be useful to make some general observations by way of an introduction to the report that follows.

3.2. Perhaps the important factor that strikes an Indian visitor to China most is its geography. China today has a geographical area of 2,371 million acres as against 811 million acres for India. But big as China is, a considerable part of it is unproductive. More than 50 per cent of this area consists of mountains, steep hills and cold plateaux. Of the balance, two-third is arid. Barely 15 per cent of the land is even potentially usable for agriculture. And only 11 per cent of the land area is actually cultivated as against the figure of 37 per cent for India. The total cultivated area in China is 272 million acres as against 302 million acres in India. Of the balance of the geographical area, 188 million acres are under forests and the rest is barren.

3.3. Geographically, China has been likened to a huge oasis. On her north lie nearly a thousand miles of desert, on her west are the highest of plateaux and mountains, to the east and south lies the widest of the oceans. Her coast line is a rounded one and much less broken than that of India. On account of the difficult nature of her geographical terrain, the building of roads and railways is a costly proposition. Transport facilities are, on the whole, less satisfactory than in India. Until modern times, China's contacts with outside world were relatively few. The land route lay through the western-most gateway—or the 'Jade Gate', as it is called—of the Great Wall and through it passed caravans of traders in jade and other precious commodities and also pilgrims who helped to maintain valuable cultural contacts with the rest of the world. But these caravans, valuable as they were for maintaining cultural contacts with the rest of the world, were not important from the point of view of either business or political relations.

3.4. China had never been invaded from outside eastern Asia until the Europeans crossed the ocean and came to her western coast. With the arrival of the Europeans, China developed new gate-ways and the ports of Shanghai, Tientsin, Dairen and Canton, became new front doors and these soon became immensely more important than the old Jade Gate of the Great Wall. For about 100 years nouvil since the middle of the last century, China has had much greater contacts with the maritime powers like America, Japan, and European countries and with the colonies of these countries in the Far East than with her neighbours in Central Asia and the Middle East. During the last five years, however, the boycott of China by America and her allies has been one of the factors compelling China to turn once again across her western caravan routes and establish closer contacts with Soviet Russia and countries of eastern Europe although, from considerations of facility of transport alone, the total volume of foreign trade passing through her maritime ports in the East might be expected to be much greater than that passing through the land routes in the West.

Climate

3.5. China's climate is much more extreme than that of India. Her land mass stretches from 4° to 53° 57′ north latitude and unlike India she has no high mountains along her northern border which could shelter her plains from the northern winter winds. To some extent, China also has a monsoon climate especially towards the south though it is much less marked than in India. During winter, Chinese weather is an importation of Mongolia and Siberia, in summer the characteristics are those of tropical monsoon tracts. The lowest temperature recorded in China is (—) 44°F at Aigun in the extreme North East and the highest temperature recorded is 118°F at Tientsin in Central China. The number of frost-free days vary from 12 months in the southern provinces, 8 to 9 months in the Yangtze valley, 7 months in the Yellow River Basin, 6 months in Hopei and Shansi and 5 months of less further north and in the highland regions of the west and north west. In the central Yangtze region, the temperature varies between 20° to 45°F in January and 86° to 96°F in July. In January, a wave of cold air would be blowing from the north west streaming out from a high pressure area centred over Mongolia with very little rain and some storm, while in July there will be hot and highly humid air blowing from the south with frequent thounderstorms and occasional floods. The basic pattern of Chinese climate is determined by the to and fro exchange between two opposing air masses which originate over land and sea. This makes the Chinese climate most unpredictable. The most uncertain factor is the duration and intensity of the rainy season. As in India, the farmer keeps an eye on the sky while he works in his field.

3.6. Rainfall in various parts of China ranges from over 300″ a year to almost nil. Most of the south receives more than 50″ which means a dominance of rice culture, North of the mountain barrier of the Tsinling, however, there is a sharp decrease in precipitation to 20 per cent and less. In this region, wheat and millets are grown but with considerable hazard of crop failure in areas of drought. About a quarter of China, largely in the north and in the west, receives rain less than 12″ and is either unfit for agriculture or will produce crops only under special conditions of dry farming or irrigation.

3.7. Soil in South China is broadly of the type known as pedalfers (*al* for aluminium and *fe* for iron) which is a rather leached type with presence of aluminium and iron and deficiency of lime. On the other hand, soil in North China is rich in calcium and is of the type broadly known as pedocals (*cal* for calcium). The former is acidic, compact and heavy textured, while the latter tends to be alkaline, porous and friable. The leached soils of the south are favourable to rice. Calcium soils in the north are favourable to wheat. Within these broad types, there is a great diversity of soils in the country. South of the Yangtze, red and yellow lateritic soils predominate in the upland areas. The fertility of these soils is moderate to poor. The red basin of Szechwan has purplish brown soil which is generally good for agriculture. Brown and grey brown soils are found in the mountains of central and southern China. The fertility of these soils is only moderate. Alluvial soils predominate in the flood plains or deltas of the rivers of South China and are good for paddy cultivation. In the north, the most predominant soil in Manchuria is black earth or Chernozem which is considered good for wheat. Chestnut brown soil which is akin to Chernozem but is deficient in humus, occurs extensively near the Great Wall, in eastern Mongolia and from Shansi to Kansu Grey desert soils occur in the north-west and grey and grey-brown forest soils occur in Shantung, Jehol and the adjoining areas. The soils in the alluvial delta of the Yellow Plain resemble some of the high lime soils of the Ganges lowlands in India. Extensive areas in the Yellow Plain, in West Manchuria, Tibet and Sikiang have saline soils. **Soil.**

3.8. These natural conditions account for a peculiar distribution of agriculture and population in China. If a straight line is drawn on the map between Aigun in the extreme north-east and Tengchun in the extreme south-west we get two contrasting regions. The part lying north-west of the line contains 64 per cent. of the total area of China, but only 6 per cent. of her cultivated area and 4 per cent. of her population. The south-eastern part contains 36 per cent. of the total area but accounts for as much as 94 per cent. of the cultivated area and 96 per cent. of

the total population. In an old country, the map of where people live is a map at the same time of where they have been able to live. As a result of heavy pressure of population for over 3,500 years of recorded history, every bit of land in China which is cultivable by human or animal power has been put to use. There are, of course, areas in the north-west of the line mentioned above which could be brought under cultivation provided modern engineering and farm techniques were introduced in a large scale so as to overcome natural difficulties. In fact, the Chinese authorities estimate the total area in China that is theoretically reclaimable to be as much as 250 million acres. But the actual reclamation of most of this area is likely to take time and will entail heavy investment, the marginal value of which is likely to be low when compared to the alternative uses to which these resources could be put. This is now being increasingly recognised in China. Although the scope for the extension of cultivated area is thus limited, there is considerable possibility for growing more than one crop per year in the same area in several parts of China which have assured water supply either from artificial irrigation or from steady rainfall. Between 1952 and 1955 irrigated area in China has increased from 57 million to 64 million acres and the gross area sown has increased from 349 million to 373 million acres. Thus although China's cultivated area is lower than that of India *viz.*, 272 million acres as against 302 million acres, her gross sown area is larger *viz.*, 373 million acres as against India's 315 million acres.

Crop Seasons.

3.9. The fact that the country extends from 4° to 53° 57′ north latitude and has a large area where multiple cropping is possible gives it a larger variety of sowing and harvesting seasons than is found in most other countries. In the Manchurian plain in the north, climate limits farming to one crop a year. Warm weather begins in April and crops may be planted even though the sub-soil is still frozen. Spring wheat, maize and tobacco are sown at this time. Soya bean, kaoliang (sorghum) and millets are planted in late April or early May. Harvests come in late September. October has sunny days but frosts at night may destroy any crop not yet harvested. From November to March, the ground is frozen so that the growing of winter grains is impossible. Below the Great Wall is the winter wheat region. Wheat planting is done as early in the north as the middle of September in Shansi and Hopei and progressively later from north to south—early in November in Nanking and in the middle of November in Szechuan. Winter resting period of wheat varieties in the North is longer than that of the southern varieties. Consequently, the harvesting time of wheat is as late in the north as July in Shansi and late June in Hopei and progressively earlier from North to South—late May in Nanking and April in Szechuan. In the whole province of Shantung, large parts of Honan and Hopei and

the northern parts of Kiangsu and Anhwei, millets are usually sown in April, May or June. If the soil moisture is adequate, a small amount of millets may be sown in July after the wheat harvest. Kaoliang is planted in April and harvested from late August to September. The growing season for other summer crops such as millets, green beans, sweet potatoes and peanut is shorter than that for kaoliang. Cotton, usually, under well irrigation, is planted in late April and harvested in September. Maize is generally sown as a spring crop. The seeding time in southern China is March and April. Further north, it falls in April and May. In the provinces of Hopei, Honan, Shantung and Shansi, maize is a summer crop and is sown in June after the harvest of wheat or other winter crops. In Kwangsi, it is also grown as an autumn crop being planted in July after the harvest of the spring crops; two crops of maize may be sown in a year in that region by planting the second before the first crop is fully mature. Rice plantings are concentrated south of the Yangtze river and gradually decrease towards the north as rice can be planted only in regions where the average temperature between May and August is around 68° F. In the Yangtze rice-wheat region comprising the three provinces of Hopei, Anhwei and Kiangsu, early rice is planted in the beginning of April in seed beds and the seedlings are transplanted to the fields three to five weeks later. Harvesting is done in August and September. For late rice, the harvesting period falls in October or early November. In the rice-tea region which includes a large part of the four provinces of Honan, Kiangsi, Chekiang and Fukion, there is a practice of interplantation of rice. The planting time of early and late varieties is from April to May. In years of late spring, the early varieties are planted at nearly the same time as the late ones; otherwise, the early varieties are planted two to three weeks earlier than the late ones. When the early rice is transplanted, appropriate space between rows is saved for transplanting the late variety, which is done six to ten weeks later. The harvesting time of the early rice falls in July and of the late rice in October. In the double cropping rice region which includes the whole province of Kwangtung, the eastern and central parts of Kwangsi and the southern parts of Fukien and Kiangsi, early rice is grown from February to the end of June and late rice from August to November. In this region maize is grown from November to February, while sweet potatoes can be planted in any month but are usually grown from November to February.

History.

3.10. Next to her geography, the most important thing that must strike a visitor to China is her history. China's history has been characterised by half a dozen great dynasties most of which were accompanied by periods of stability and progress. During the change-over from one regime to another, however, there were "periods of trouble" sometimes lasting for decades and once for as long as a century

But sooner or later, the rhythm of China's history asserted itself and stability returned. The last dynasty ended in 1911. Thereafter, China has had four decades of "trouble". It must be admitted that compared to the weakness of the Chinese Government during the 19th Century and the dissensions and disturbances which marked China's political life until a few years ago, China today is immensely unified and stable. There is a spirit of confidence and vigour in her people and a yearning for progress which, given peace, can only be a harbinger of great things to come. Developments in recent years in China cannot be properly understood unless one carefully studies China's history of the last few decades. An ancient and proud people, the Chinese had been buffeted about by foreign powers ever since the middle of the last century. There had been political instability and civil war almost constantly since the beginning of the present century. Since the Japanese invasion in the thirties, the Chinese people had not known any peace. Worst of all, there was not only a war against Japan, there were also fights between various warlords in the country and all these were followed by civil war between the supporters of the Kuomintang and the Communist parties. During this period, China's industry as well as agriculture, in fact economic life in general, had deteriorated sharply as a result of political instability. What the Chinese people most yearned for was peace and national self-respect. These came in 1949. If nothing else had happened in China except this establishment of peace all over the country and the assertion of a new nationhood. these alone would have led to a tremendous release of the energies of the Chinese people and prepared the way for rapid economic development. The Chinese are a hardworking intelligent people. In the past also they had gone through such temporary periods of "trouble" but whenever chaos ended and peace returned, there was invariably much flowering of culture and improvement in economic life.

Return of Peace.

3.11. The period since Liberation has been marked by active and purposeful leadership of the people on the part of the new regime and by a series of practical achievements which have greatly strengthened China and her economy. During the last few years of the Kuomintang regime, there was a wild inflation which had resulted in a complete dislocation of the normal economic life of the country. Corruption and inefficiency amongst Government officials and black marketing and profiteering amongst traders and industrialists had increased to an unprecedented level. The fact that the present Government took drastic measures to control inflation and suppressed evil practices with a ruthless hand helped cleanse the atmosphere very considerably.

3.12. During the period of the present regime a number of 'movements' have been launched. They were intended

to achieve much needed reforms no less than to divert the energies of the people into constructive channels. In each movement the members of the Communist Party played the leading role and everywhere they constituted the core of well-organised mass effort. The position of the Party in all national efforts of basic importance, therefore, needs to be understood.

3.13. There appears to be almost complete identity in China between the ruling party and the administrative machinery in all spheres and at all levels of government. In a parliamentary system of government where the opposition parties have the right to defeat the ruling party in the elections and form the government, it is considered desirable to keep the administrative machinery non-political so that any party that may capture power may without any hesitation make use of it as a reliable instrument for the implementation of its policies. But in China, the situation is very different and the ruling party does not attempt any rigid separation of the administrative cadres from the political cadres. Not only are many of the government officials active members of the Communist Party, in each important government department there is a special section for maintaining liaison with the Communist Party, officers of the party and the government sometimes change places, and in much of the executive work of government the drive and the initiative as well as organised support comes from the cadres of the Communist Party. Recent developments in China even in the economic field cannot be properly understood unless one understands the place of the Party. The Communist Party of China which started with 100 members in 1921 now has a membership of 10·7 millions organised in a hierarchical structure and subject to strict discipline. The membership is not open to everyone. One has to go through a process of careful scrutiny and a period of probation before qualifying for membership. Thus, every member of the party considers himself to be an elite and is normally prepared to work hard in the service of the party. Members of the party take a prominent part in activities in every village, every street committee, every workshop and every government office. They are the watchdogs of the government and the force behind its activities. Although China had the oldest civil service in the world it had disintegrated almost completely even before the last war. But for the active role played by the party-members, it would have been impossible for the new government to implement its policy. But even disciplined party cadres need to be continuously inspired to greater effort. This may account in part for the special drives or campaigns which are organised from time to time to keep the party organisation in good trim. With the large increase in the membership of the party, it has also become important now to keep the principles and ideals of the party constantly before the members and to maintain purity within the party. Even a relatively un-

The Communist Party.

important member of the party may sometimes wield considerable power. Strict party discipline is necessary to ensure that such power is exercised properly. The various drives have usually come one after another in big or small waves, as it were, and have helped to strengthen the political leadership of the party as well as to further the implementation of the plan of economic development.

Special "Drives"

3.14. There have been many such 'drives' in recent years *e.g.*, suppression of counter-revolutionaries, land reforms and suppression of landlords, aid to Korea, peace appeal, implementation of marriage law, ideological reform, national reconstruction, sanitation, production increase and austerity, 3-anti (San Fan) and 5-anti (Wu Fan) movements, campaign against bureaucratism, commandism and violation of laws and discipline, etc. These country-wide drives usually start with criticism of a few typical cases in one or two newspapers followed in sequence by a limited testing campaign in one of the old liberated areas, statements and appeals by some national leaders and then a country-wide tearing campaign by millions of party members and large number of mass meetings culminating in mass action. Each special 'drive' usually lasts for a limited period, say, for 6 to 18 months, but sometimes the programme taken up is of a permanent character. Campaigns affecting only a particular sector of the society or economy are also launched from time to time. In the field of agriculture, the campaigns for popularising collective farms, introducing double-share double-wheel ploughs, encouraging "close-planting", stepping up of the use of night-soil and manures, destroying sparrows, rats and other pests, planting shelter belts for soil conservation etc. may be cited by way of illustration.

Drives against corruption.

3.15. Of the campaigns undertaken, those against various forms of corruption have special significance inasmuch as they not only helped the Chinese authorities to liquidate the anti-social elements but also to create a climate more suitable for the implementation of their economic policy. The 3-anti (San Fan) movement against corruption, waste and bureaucratism was directed mainly towards officials and party cadres who had assumed new positions, and the 5-anti (or Wu Fan) movement against bribery, tax evasion, fraud, theft of state property and theft of economic secrets, was directed mainly towards the business and commercial classes. These momements lasted officially from October 1951 to June, 1952 but were taken up again in 1953 as campaign against bureaucratism, commandism and violation of laws and discipline. This last campaign was as much against errant members of the Communist Party as against non-party men. According to Chinese authorities, in the course of the San Fan movement, 4.5 per cent. of the government workers were found guilty, in varying degrees, of corruption, waste and bureaucratism. The most serious offenders were tried and

punished by the People's Courts. The others were given departmental punishment. In the course of Wu Fan movement investigations were made into more than 450,000 private industrial and commercial establishments, of which 76 per cent. were found guilty of various illegal transactions. The most serious offenders were given judicial sentences. The rest were censured and brought to the correct path in other ways. While these movements helped to purify Chinese officials and businessmen, they also gave rise to certain problems. Mr. Chen Yun, one of the Vice-Premiers of China, has stated that as a reaction to these campaigns, the rates in certain contracts were fixed unduly low, the rejections by certain factory inspectors became unduly high, commerce and industry tended to stagnate and labour tended to become indisciplined and make impossible demands upon employers. Firm measures had to be taken to prevent the swing of the pendulum to the other extreme. A campaign which depends largely upon popular enthusiasm and is based on simple slogans cannot obviously remain within the prescribed limits or be always nicely balanced. For instance, when the "drive" for agricultural improvement was started, much enthusiasm was created and people wanted simple prescriptions which they could immediately put into practice. The authorities had, therefore, to suggest certain new implements and techniques on a mass scale and without proper experimentation in different areas and for different crops. These led to certain difficulties. For instance, as the Prime Minister of China himself told us, the farmers wanted new implements and the Agricultural Ministry started a drive for popularising double-share double-wheel ploughs and one million ploughs of this type were sold to farmers. But this was done as a part of a campaign and was not preceded by careful experiments under different soil and crop conditions. These ploughs were found unsuitable in many areas and the Government had to purchase some of these ploughs back. Similarly, following the recommendations of certain foreign technicians, the method of 'close-planting' was recommended on a mass scale during one of the campaigns without any proper experimentation for different crops and different localities. While 'close-planting' was successful for a few crops and in certain areas, it was not so successful in the case of other crops and in other areas. One of the Vice-Ministers for Agriculture admitted that in several areas this technique had not given the results anticipated. There had been other instances also of this type. The main point was that because these movements took the shape of mass campaigns, careful experimentation was not always undertaken, and simple solutions were proposed. There is little doubt, however, that many of these campaigns served to lift the mass of the people out of the old ruts and set them on the road to progress. With the experience which they now have,

the Chinese authorities are finding it possible to run these campaigns in a more organised manner. There is also at present better co-ordination between campaigns organised by the party and administrative action taken by Government Officials.

Training of technicians.

3.16. An important aspect of the development now in progress in China concerns the scale on which the Chinese are undertaking technical training programmes in various fields. The Chinese realise that there is no greater force for progress than the availability of a large number of trained technicians in the country. They are, therefore, making all-out efforts to increase the number of trained personnel as fast as possible not only by providing facilities for whole-time training but also for part-time training and in-service training. In fact, their policy has been to provide training facilities to as large a number of students as possible even at some sacrifice of the quality of training, if necessary, rather than restrict the number of students in the interest of maintaining a very high standard. They feel that a technician who has got reasonable basic training can be later on improved by in-service and part-time training and, therefore, it is not necessary that the standard of the basic training should be very high. They propose to expand the existing universities and technical institutes and also to establish 60 new institutions for "higher learning" by 1957. They expect to train up 283,000 new graduates from technical colleges, 888,300 students from various secondary vocational schools and 920,000 other skilled workers during the five years, 1953-57. No trained technician is allowed to remain unemployed in China. As soon as a student passes from a technical school or college, he is immediately put to work, if necessary, by creating a job for him. This may partly explain the unduly large number of technicians at some factories and institutions that one can see in China.

Industrialization.

3.17. It should be pointed out here that the main emphasis in Chinese planning is not on agriculture but on industries especially heavy industries. In the First Five Year plan the investment in industries was 31,320 million Yuan (Rs. 6264 crores) or 40:9 per cent. of the total. The target was to raise the total value of industrial output from 27,010 million yuan (Rs. 5402 crores) in 1952 to 53,560 million yuan (Rs. 10712 crores) in 1957. The output of pig iron was to be increased from 1,900,000 tons to 4,674,000 tons, of steel from 1,350,000 tons to 4,120,000 tons, of ammonium sulphate from 181,000 tons to 504,000 tons, electric motors and generators from 6,687,000 KW to 1,275,000 KW, machine cutting machine tools from 16,298 tons, to 28,292 tons etc. The Chinese authorities reckon that the targets of industrial production in the First Five Year Plan will be fulfilled in advance of the Plan. Hence under the Second Five Year Plan, they propose to increase

their industrial production further by about 100 per cent. over the target figures for 1957, the last year of the First Plan. The corresponding target for the increase of agricultural production by 1962 over the target for 1957 is 35 per cent. A programme for industrialization of this magnitude will bring about a profound structural change in the economy of China and will, in the long run, also induce a fundamental technical change in the character of Chinese agriculture. But as Mr. Chou-en-Lai told us, chinese authorities themselves were not keen on accelerating the mechanization of Chinese agriculture in the near future on account of social and economic considerations. The main assistance that they envisaged China's growing industries would render to her agriculture in the immediate future would be to provide much larger supplies of fertilizers, insecticides, implements and other requisites.

Prices and Incomes.

3.18. As a result of increase in industrial and agricultural production in recent years and better distribution of incomes, there has been a noticeable improvement in the standard of living of the mass of the people in China. But we noted that the cost of living in China was substantially higher than in India. For instance, at the time of our visit, the retail price of ordinary rice was -/9/3 per seer in Shanghai, of wheat -/9/9 per seer, vegetable oil for cooking Rs. 2/2/- per seer, potatoes -/3/6 per seer, peas -/3/6 per seer, mutton Rs. 2/3/- per seer, sugar Rs. 2/- per seer, cotton shirting Rs. 4/- per yard, cotton suiting Rs. 8/- to Rs. 10/- per yard, woollen suiting Rs. 45 to Rs. 50 per yard and shoes Rs. 30 to Rs. 40 per pair. On the other hand, the minimum salary of a clerk was Rs. 70 per month while a high government executive was paid a salary of Rs. 640 per month. The salary of a college lecturer was Rs. 260 per month, an ordinary professor Rs. 500 per month and professors and research workers of outstanding merit Rs. 800 per month. We were told that the highest salary in Government was paid to the Chairman of the Republic who got Rs. 1,200 per month. But some actors and artists in the country had even higher incomes. Some of the managers of private industries or state-*cum*-private enterprises got a salary of as much as Rs. 2,000 per month plus dividend on their capital which in some cases was as high as Rs. 4,000 or Rs. 5,000 per month. All the personal incomes were tax free, because in China income tax is levied only on private enterprise and not on individual employees. Besides salary, the employees of government and various enterprises received certain benefits by way of free medical treatment, free education, cheap houses, etc. The minimum wage for workers in factories was equivalent to the salary of a low grade clerk, a skilled worker usually got 3 times the wages of an unskilled worker. Most of the workers were, however, paid on a piece rate system and were given bonuses in addition. The income of a farm family varied between Rs. 60 and

Rs. 75 per month. When we were in China, discussions were going on about raising the pay scales, especially in government services. There was also a proposal to allow a more than proportionate increase in the scales of pay of scientific, technical and managerial personnel.

Cultural Development.

3.19. Although in China today the main emphasis is on development of industry and agriculture, the State is also making intensive efforts for the cultural development of the country. Artists and writers are being specially encouraged. The State purchases and also arranges for the sale of the paintings of promising young artists and encourages them in many ways. While they are taking steps to preserve the arts and treasures of ancient times and also to renovate some of them, their eyes are fixed more on the future than on the past. Western tunes have been set to Chinese songs. In almost all the hotels where we stayed, we found large dance parties being organized by youth clubs and boys and girls mixing as freely as in any western country. The campaigns for the implementation of the marriage law and for ideological reforms were particularly designed to reform the old social structure and to put an end to obscuranist thinking. The extent to which women have been emancipated in China is indeed remarkable. It is almost of a piece with female emancipation in European countries. Women are not only holding important offices of State but also managing factories and collective farms and driving tractors. As in other communist countries traditional family loyalties are being weakened in a process of making the individual give higher priority to the interests of the State than to the interests of the family. There are, however, indications that the Chinese may not perhaps go to the extreme. They will probably seek to evolve a balance between the old and the new. It was interesting to note that, in China, portraits of the leaders and pictures of farms and factories had not replaced traditional works of art as had been the case in some of the other communist countries. Whether one goes to an office. a hotel, or a private house, one sees a beautiful picture of a frolicking horse, or a pair of birds in a bamboo grove or a cottage by a mountain steam. The portraits of the leaders are no doubt displayed in important places, but are certainly not ubiquitous. Another interesting fact is that we did not come across any Mao-tse-Tung city or Chou-en-Lai collective farm in China.

China's Communist Leadership.

3.20. Any visitor to China cannot fail to notice that there is a difference between the general attitude of the Communist leaders of China and of some of the other countries. The Chinese Communists are not only communists but are also essentially Chinese and one of the strongest characteristics of the Chinese throughout the ages has been their strong sense of realism. One of the advantages enjoyed by the Communist Party of China has been that they had 30 years' experience of the Russian communist regime before

them and were able not only to adopt features useful to them but also to avoid the Russians' mistakes. Secondly, in Yenan, they had a laboratory where they tried out their ideas for over a decade. This gave them practical experience of administration which proved to be useful when, later, they took charge of the whole country. Perhaps, the most important point about the Communist Party in China is that most of its leading members, and especially those who laboured for it through the difficult years, came from the peasantry. They have not only been born in peasant families but have worked for the greater part of their lives in rural surroundings. They have, therefore, an instinctive understanding of the problem of the village and the psychology of the peasant and, doctrines apart, continue to be close to the soil.

3.21. We should make it clear, however, that there is no essential difference so far as the ultimate objectives of a classless society, dictatorship of the working masses and socialistic methods of production and distribution are concerned. The system of communism in China, however, it may have been adapted to the needs and conditions of Chinese society, does not of course provide for freedoms such as those of information, expression and association in the manner familiar to us in India. In this sense, it shares inevitably several typical political features with communist countries in the west.

3.22. In the field of political, economic and social changes, events in China have moved fast during the past few years. To what extent the leaders of new China had anticipated their main steps before they came to power it is difficult to say, but many pertinent hints can be found in the works of Chairman Mao-tse-Tung. Although the time has not yet come for a balanced assessment, it is safe to suggest that the successive moves made by the Government and the Communist Party in China, in retrospect at any rate, fit into a well-knit scheme. Thus, in the rural sector, the organisation first of a State-*cum*-cooperative system of supply and marketing and purchase of foodgrains and farm products by the Government followed in succession by land reforms with emphasis on land for the tiller, organisation of mutual aid teams, development of cooperatives of the elementary type and the 'surging tide of cooperation' now in evidence for the past 18 months or more have together wholly transformed the village scene. In the same manner, the taking over first of basic industries, banks and insurance by the Government soon after Liberation, the functioning of the private enterprise economy for several years thereafter as subsidiary to the State economy, the recent transformation of commercial and industrial undertakings into joint State-private enterprises and the almost certain prospect of the disappearance, at no distant date of the dividend on private capital re-

present another set of institutional changes with far-reaching consequences for the national economy of China. Instruments of economic power have their parallel in measures affecting the handling of different elements of society such as peasants, workers, technicians, intellectuals and so on. A series of changes such as those witnessed in China have to be explained to the millions and understood by them, so that they, become an intrinsic element in their own thinking and beliefs. Hence the great stress on political education in all fields and at all levels on political education and the role of the Communist Party, with its many ramifications, in educating the people and leading them along new ways. The success of the institutional changes which have taken place and of the political education which is imparted almost universally in China may be measured by the degree of support and practical effort which is drawn into various activities. No small part of this political education lies in the strengthening of Chinese patriotism, an old sentiment, which now finds expression through new aims and institutions.

CHAPTER IV

ADMINISTRATION AND PLANNING

Unitary Government.

4.1. China has a unitary form of government. This is in marked contrast with India where we have a federal constitution and the constituent States enjoy a very substantial amount of autonomy both in theory and in practice. Although under the emperors also China had in theory a unitary form of government, the writ of the Central Government never ran throughout the country so effectively as it does today. Under the emperors as well as under the Kuomintang regime, provincial governors, warlords and even local chieftains enjoyed a very large measure of autonomy so much so that there were times when the writ of the Central Government did not run beyond a few hundred miles from the national capital and occasionally even beyond a few miles from the garrison towns.

4.2. All that has changed now. For the first time in history, China has a strong unified structure of administration and is ruled by a powerful and well-organised party which has its own disciplined cadres working at all levels of government from the Centre down to the smallest village. In China to-day, the Communist Party is almost synonymous with Government and there also appears to be considerable inter-change of experience and information and sometimes also personnel between the party and the administration at all levels.

The administrative set-up.

4.3. As has been mentioned earlier, China has a total area of 2,371 million acres including the island of Taiwan which has yet to be liberated, but which for constitutional purposes is counted by the Chinese authorities to be an integral part of China. The country is divided into 30 major administrative areas. Of these, 23 are provinces, *viz.*, Hopei Shansi, Liaoning, Kirin, Heilungkiang, Shensi, Kangsu, Tsinhai, Shantung, Kiangsu, Anhwei, Chekiang, Fukien, Honan, Hupei, Hunan, Kiangsi, Kwangtung, Kwangsi, Szechuan, Kweichow, Yunnan and Taiwan (still to be liberated); 3 are centrally controlled municipalities *viz.*, Peking, Tientsin and Shanghai and 4 are autonomous regions, *viz.*, Inner Mongolia, Sinkiang, Changtu and Tibet. The Provinces are divided into a number of counties and provincially controlled municipalities. There are altogether 2117 counties in China and 629 municipal districts. Under the counties and municipal districts there are small administrative units called hsiangs and townships. There are altogether 194,858 hsiangs in China and 4,487 townships. Each hsiang comprises of 500 to 1,000 families (or 2,500 to 5 000 inhabitants) and may comprise of either one

or two big villages or five to ten small hamlets. It is the hsiang or the township which is the primary administrative unit in China.

4.4. The supreme political as well as economic authority in China is the National People's Congress which is equivalent to our Parliament. All major decisions regarding planning have to be finally approved by it. But the National People's Congress of China which has a large membership and meets only once a year is more of a decision recording body than a decision making body. It has a small Standing Committee which meets frequently and carries out, on behalf of the National People's Congress, many of the functions that a Parliament is normally expected to do. This system of a big congress and a small standing committee seems to have the advantage that while the former enables a large number of areas and interests being represented by deputies who are familiar with local conditions and who can devote more time to their own fields of work, the latter enables the legislative business to be carried on more expeditiously.

4.5. Under the National People's Congress, there is a State Council which is equivalent to our Cabinet. It is the Chairman of the Republic, the Chairman of the National People's Congress who is also the Head of the Standing Committee of the Congress and the Premier who is the Head of the State Council who are the three key figures in the Chinese system of administration and who, between themselves, virtually rule the whole country. The Chairman of the Republic is not only the Head of the State but also the Head of the dominant political party *viz.*, the Communist Party of China.

Set-up of the Central Government.

4.6. The State Council has under it a number of Ministries and Commissions. A number of Ministries are grouped into Offices and while each Ministry is in charge of a Minister, each Office of the State Council is in charge of a Vice Premier. There are at present 8 offices, 41 Ministries, 7 Commissions and 24 other Bureaus directly under the State Council. The following list which gives the composition of the State Council and its constituent units will give an idea not only of its organization but also of the various Ministries, Commissions, etc., which are responsible for administration of different subjects in China:

(1) *Premier.*—Premier's Office, Ministry of Foreign Affairs, Ministry of Defence.

(2) *Vice Premier in charge of the 1st Office of the State Council.*—Ministry of Internal Affairs, Ministry of Public Security, Ministry of Justice, Ministry of Supervision.

(3) *Vice Premier in charge of the Second Office of the State Council.*—Ministry of culture, Ministry of Higher Education, Ministry of Education,

Ministry of Public Health, Bureau of Broadcasting, The Hsinhua News Agency.

(4) *Vice Premier in charge of the Third Office of the State Council.*—Ministry of Metallurgical Industry, Ministry of Chemical Industry, Ministry of Building Material Industry, First Ministry of Machine Building, Second Ministry of Machine Building, Ministry for Manufacturing Electric Motors, Ministry of Coal Industry, Ministry of Electric Power Industry Ministry of Petroleum Industry, Ministry of Geology, Ministry of Building, Ministry of Municipal Construction.

(5) *Vice Premier in charge of the Fourth Office of the State Council.*—Ministry of Textile Industry, Ministry of Light Industry, Ministry of Food Industry, Ministry of Labour, Central Handicrafts Bureau.

(6) *Vice Premier in charge of the Fifth Office of the State Council.*—Ministry of Finance, Ministry of Food, Ministry of Commerce, Ministry of Foreign Trade, Ministry for Purchasing Farm Products, Ministry of Acquatic Products, Ministry of Municipal Services, People's Bank of China.

(7) *Vice Premier in charge of the Sixth Office of the State Council.*—Ministry of Railways, Ministry of Communications, Ministry of Post and Tele-Communications, The China Civil Aviation Bureau.

(8) *Vice Premier in charge of the Seventh Office of the State Council.*—Ministry of Agriculture, Ministry of Forestry, Ministry of Timber Industry, Ministry of Reclamation, Ministry of Water Conservancy, Bureau of Meteorology.

(9) *Vice Premier in charge of the Eighth Office of the State Council.*—State Planning Commission, State Economic Commission, The National Construction Commission, The State Technical Commission, The Physical Culture and Sports Commission, Nationalities Affairs Commission, Overseas Chinese Affairs Commission, State Statistical Bureau, Bureau of Weights and Measures, Bureau of Survey and Drawing, Central Industry and Commerce Bureau, Bureau of Supply.

(10) *Other Offices directly under the State Council.*—Committee for the reform of the Chinese script, Bureau for Cultural Relations with Foreign Countries, Bureau for Religious Affairs, Bureau for Legislative Affairs, Bureau of Personnel of the State Council, Bureau of the State Archives, Central Bureau of Confidential Communications, Office of the Adviser to the State Council, Bureau of Experts, Bureau of Foreign Experts, Bureau of Administra-

tion of the State Council, Secretariat of the State Council.

4.7. It will be noticed that in China the number of Ministries and other offices dealing with economic and social matters is much larger than what we have in India and that there is much greater division of work between Ministries than is the practice in India. For instance, in India the Ministry of Food and Agriculture have responsibilities which extend to as many as 8 Ministries in China *viz.*, Ministry of Agriculture, Ministry of Forestry, Ministry of Reclamation, Ministry of Water Conservancy, Ministry of Food, Ministry of Food Industries, Ministry for Purchasing Farm Products and Ministry of Acquatic Products.

4.8. There are two types of meetings of the State Council, Plenary and Executive. The Plenary meetings are attended by all the Ministers, and all the Heads of Commissions. The executive meetings are attended only by the Premier and the Vice Premiers. For all practical purposes, the Vice Premiers in China may be compared to our Cabinet Ministers and the ordinary Ministers in China may be compared to our Ministers of State. There are several Ministers in China who are not deputies of the People's Congress or who are promoted officials. Unlike in India, there is no rigid distinction in China between a political office and an administrative office and a person holding an office of profit under government is not debarred from becoming a member of the National People's Congress.

The set-up of provincial government.

4.9. At the provincial level the administration is in charge of a Governor who is appointed by the Chairman of the Republic. The Governor is assisted by several vice-Governors and a Provincial People's Council. Under the Provincial People's Council, there are a number of departments which receive technical guidance from the corresponding Ministries at the Centre but are under the immediate administrative control of the Governor and the People's Council of the Province. The set-up of a Provincial Administration may be illustrated by the following typical example from the Province of Chekiang. In Chekiang there is a Governor, 4 Vice Governors and the following departments under the overall control of the Provincial People's Council:

(1) *Office of Politics and Law.*—Departments of Civil Administration, Department of Public Security, Department of Legislation, Department of Supervision, Department of Nationalities Affairs, Department of Religious Affairs.

(2) *Office of Culture and Education.*—Department of Education, Department of Public Health, Bureau

of Culture, Committee for the protection of Historical Relics, Commission for Sports and Physical Culture.

(3) *Office of Finance, Trade and Communication.*—Department of Finance, Department of Commerce, Department of Food, Department of Communication, Bureau of Material Supplies, Bureau of Foreign Trade, Bureau for the Purchase of Agricultural Products, Bureau of Acquatic Products.

(4) *Office of Industry.*—Department of Industry, Bureau for the Administration of Handicrafts, Bureau of Architecture, Bureau of Labour.

(5) *Office of Agriculture and Forestry.*—Department of Agriculture, Department of Forestry, Department of Water Conservancy.

(6) *Other Offices.*—Office for the Transformation of Capitalism, Bureau for Administration of Salt Industry, Provincial Planning Commission, Provincial Statistical Bureau, General Office, Bureau of Personnel, Adviser's Office, Department of Protocol.

Set-up of the county administration.

4.10. Below the provincial level, the administrative set-up at the country level is more or less similar although naturally on a much smaller scale. There is a County People's Council in charge of each County. By way of illustration we give below the administrative organisation of the Jui-an County of the Chekiang Province. In this County, there are the following Bureaus under the County People's Council.

Civil Administration Bureau, Public Security Bureau, Section on Industries, Section of Photographs, Section of Communications, Planning Section, Statistics Section, Finance Section, Bureau of Taxes, Bureau of Commerce, Bureau of Food, Bureau of Agriculture, Section of Forestry, Section of Water Conservancy, Section of Acquatic Products, Section of Culture and Education, Section of Public Health, General Office, Section for Personal Affairs.

Hsiang Administration.

4.11. As has been mentioned above, the lowest administrative unit is the Hsiang People's Council. The administrative organization of Shan-Wan hsiang of Jui-an County of the Chekiang Province may be given here as a typical illustration. In this hsiang there is a Hsiang People's Council under which there are the following committees:

Committee of Civil Administration, Committee of Public Security, Committee of Militia Affairs, Committee of Co-operatives & Co-operation, Committee of Finance and Food, Committee of Culture, Education & Public Health, Committee of Intercession (or mediation in the case of disputes between members of the hsiang).

People's Councils.

4.12. The representatives to the People's Councils at the hsiang, county and provincial levels and the People's Congress at the national level are elected once every four years by a system of adult franchise at the lowest level and indirect election at other levels, the representatives to each body being elected by the members of the People's Council at the immediate subordinate level. Representatives need not, however, be members of the respective electing bodies. This system of indirect election means that the elections are much less costly than they would have been if the system was one of direct election in a number of large constituencies as is the case in India. Moreover, because at each level of administration, *viz.* the province, the county or the hsiang, there is an elected People's Council, there is much greater participation by people's representatives in the work of administration than is the case in the districts and tehsils in India.

4.13. While for the purpose of general administration, the authority passes directly from the National People's Congress to the Provincial People's Council, the County People's Council and ultimately to the Hsiang People's Council, in economic matters there are two channels of communication. One is through the concerned Central Ministry to its counter-parts in the Provinces and Counties and the other is through the State Planning Commission to its counter-parts at the Provinces and Counties. This is in accordance with the principle of double subordination which seeks to ensure that technical and administrative considerations should receive equal emphasis and that there will be independent scrutiny by two different bodies. At the Hsiang level, this division of labour ceases and the Hsiang People's Council is responsible for general as well as economic administration.

Set-up of the Ministry of Agriculture.

4.14. The organisation of a typical Ministry at the National Government as well as its counter-parts at the Province and County levels may perhaps be best illustrated here by giving some details about the Central Ministry of Agriculture and the Agriculture Departments of a typical province and a typical county. The Central Ministry of Agriculture of China has one Minister, three Vice Ministers, two Assistant Ministers and a staff of 816 of whom 706 are technical or administrative officers and 110 are clerical or other subordinate staff. Its constituent offices and departments are as follows:

> General Office, Office of Supervision, Committee of Communist Party, Youth League and Political Education, Department of Personnel, Bureau of Industrial Crops, Bureau of Plant Protection, Bureau of Agricultural Planning, Bureau of Land Utilization, Bureau of Liaison, Bureau of Animal Husbandry and Veterinary Services, Bureau of Publicity, Bureau of Co-operation, Bureau of Education,

Bureau of Seeds, Bureau of Food Crops, Bureau of Agricultural Machinery and Office of Experts.

Provincial Department of Agriculture.

4.15. As has been mentioned before, each province has a a Department of Agriculture which is the counter-part of the Central Ministry of Agriculture at the provincial level. The strength of the department no doubt varies from province to province, but some idea of the organization of an average provincial Department of Agriculture may be obtained from the following particulars regarding the Department of Agriculture of the Heilungkiang province which has a total staff of 296 of whom 279 are technical or administrative officers and 17 other staff. The various constituent sections of the Department are as follows:

General Office, Bureau of Aquatic Products, Technical Popularization Department, Department for Administration of Agricultural Machine Stations, Department of Animal Husbandry, Section of Supervision, Personnel Affairs Section, Section for the Training of Cadres, Accounts Section, Planning Section, Section on Agricultural Policy, Section for the Administration of Mutual Aid Teams and Co-operative Societies, Horticulture, Section for Captial Construction and Office of the General Branch Committee of the Communist Party.

County Bureau of Agriculture.

4.16. Similarly at the Country level there is a Bureau of Agriculture and Forestry, a typical example of which is that of the Nan-Kung County of Hopei Province. This Country Bureau has a total staff of 27, and comprises of the following five sections—

Section of Mutual Aid Team and Co-operation, Section for Technique Popularisation, Production Section, Forestry Section, General Office.

Technique Popularization Station.

4.17. Below the County level, there is no specialised staff for Agriculture at the Hsiang level. But as has been mentioned before, each Hsiang People's Council has a Committee on Production and Co-operation which is responsible for looking after various agricultural matters. Under the County, there are also a number of Technique Popularization Stations each of which has a specialist staff who work under the direct supervision of the County Bureau of Agriculture and Forestry. Besides this, there is also the staff of co-operative organizations like the Credit Societies below the County which total up to a considerable number.

Set-up for Planning

4.18. As in the case of the Ministry of Agriculture, the State Planning Commission of China also has its counterparts at the provincial and County levels. The State Planning Commission is the key-stone of the Chinese economic administration. The system of economic planning in China is very similar to that in the U.S.S.R. There are two types of plans—a long-term plan which is for

five years or more and a short-term plan which is for one year. The former lays down the general direction of economic development, fixes the broad targets of production and allocates resources. The latter sets out technical tasks and works out in great detail the break-down of the broad targets laid down in the long-term plan. Besides planning for periods of five years, attempts are also being made to prepare programmes of economic development for even longer terms wherever it is necessary. For instance, recently, a 12 year programme for the development of agriculture for the period 1956-67 has been drawn up. The distinction between a five year plan and such a long-term programme is that while in the former targets are carefully worked out in considerable detail for different regions and for different tasks and are also properly balanced with one another, in a long-term programme targets are no more than general indications of the direction in which future development should take place and no balance as between different targets is worked out.

4.19. Until 1954 both long-term planning and short-term annual planning used to be done in Soviet Russia by the same organisation *viz.*, Gosplan. In 1954, long-term planning and annual planning were made the responsibility of two different important bodies in Russia. In China, however, until July, 1956 both long-term and short-term planning used to be done by the same organisation *viz.*, the State Planning Commission which was the counter-part of the Gosplan of the U.S.S.R. From July, 1956, however, China is following the Russian example and now the work on long-term planning has been separated from that on annual planning. Long-term planning including 12 year and other perspective programming continues to be done by the State Planning Commission. But annual planning is now done by what is called the State Economic Commission which is a new body set-up *inter-alia* with some staff taken from the State Planning Commission itself. These two Commissions are quite separate organisations, although very close liaison is naturally maintained between the two.

Separation of annual Planning from long-term planning.

4.20. One obvious reason that is given for separation is that the volume of work has increased a great deal and that a division of work of this nature is calculated to increase the efficiency of operations. It appears, however, that there is possibly another fundamental reason for this change. In socialist countries like China or Russia there is no free market. The scope for checking up the estimates made by the State Planning Commission with the resultants of forces of supply and demand in a free market becomes increasingly difficult in such a country as progress is made towards socialism. In the interests of both checking the work done by an organisation and of ensuring that these organisations do not develop any undesirable practices because of lack of effective checking, it has been, for a long

time, the practice in the U.S.S.R. to have two independent organisations at each level of administration from the factory or collective farm and the town or village Soviet upwards. At each level, there is a Committee of Management or Direction and another Committee of Supervision or Control. The personnel of these Committees are invariably different. While the first Committee is responsible for carrying out the tasks laid down and has very large responsibilities and very substantial powers both financial and administrative, the second Committee is charged with the responsibility of acting like a very vigilant watch-dog over the work of the first Committee so as to ensure that there is no abuse of power or complacency or tendency to take things easy. At the top planning level, however, there was no such duplication of authority even in the U.S.S.R. until in 1954. The Gosplan was the supreme planning authority and since the Central Cabinet was there to supervise its work, it was felt for a long time that a second authority was not perhaps necessary in this case. However, the work of planning had lately become very technical and complicated and it was felt that if there were two independent Commissions both dealing with the same primary economic and technical data, but one concentrating on long-term planning and the other on annual planning, it would not only lead to better specialisation on the part of officers and hence to greater efficiency, but would also set up a system in which technical experts of one body would be constantly checking the work done by their counter-parts in the other body. It was felt that this deliberate duplication would correct many errors that would otherwise crop up in a completely socialist economy. In 1954 and 1955 China possibly did not feel the need for following this new procedure. In the first place, hers was still largely a mixed economy. Secondly, she was also facing a serious shortage of competent and technical personnel and could not, therefore, afford the luxury of two separate planning bodies at that time. But when in 1956 socialisation of the economy was stepped up very considerably and when some more people had been trained up in the technique of planning, China also decided to follow the lead given by the U.S.S.R.

4.21. Although, at the national level, the State Economic Commission which deals with annual planning has been separated from the State Planning Commission which now concentrates on long-term planning only, at the provincial or county levels, the entire work of planning still continues to be done by the same organisation. The State Economic Commission is still in the process of being constituted and so no details of its organisation can yet be given but it appears that its general administrative structure is not likely to be very different from that of the State Planning Commission.

State Planning Commission.

4.22. The State Planning Commission of China has as its Chairman one of the Vice Premiers. It has a large staff and consists of the following Departments.

Chairman's office, General Office, Bureau of Comprehensive planning of national economy, Bureau of long-term planning of national economy, Bureau of comprehensive planning of industrial production, Bureau of comprehensive planning of capital construction, Bureau of planning for heavy industries, Bureau of planning for fuel industries, First Bureau of planning for mechanical industries, Second Bureau of planning for mechanical industries, Bureau of planning for light industries, Bureau of planning for agriculture, forestry and water conservancy, Bureau of planning for communications and transport, Bureau of planning for commerce, Bureau of planning for foreign trade, Bureau of planning for labour and wages, Bureau of planning for costs and prices, Bureau of planning for finance and currency, Bureau of planning for distribution of material, Bureau of planning for mechanical and electrical equipment, Bureau of planning for training and assignment of personnel. Bureau of planning for culture, education and public health, Research and Editorial Department.

4.23. At the provincial level there is a Provincial Planning Commission which is a counter-part of the State Planning Commission at the national level. The organisation is more or less the same, main departments being industry, agriculture, capital construction, wages and labour, research and culture, transportation and communications, finance and economics, sanitation and public health. As, at the Centre, the State Planning Commission and the State Statistical Bureau are under the same Vice Premier, similarly at the provincial level, the Provincial Planning Commission and the Provincial Statistical Bureau are under the same Vice Governor. Below the provincial level, there is a Planning and Statistics Section at the County level. The total staff of this Section is about 12 to 16 of which about half are engaged on planning work and the other half on statistical work.

Basic units for Planning.

4.24. Detailed planning is really done at the level of what are called "basic units". Where the enterprises are socialistic ones like a State-owned factory or a co-operative farm, it is the factory or the farm which is the basic unit for planning. Where, however, the unit of operation or production is not a socialistic one but is still capitalistic or semi-capitalistic *e.g.* individual peasants or private industry, the basic unit for planning is not the farm or the factory but the concerned administrative unit *viz.*, Hsiang or County or Province. Plans for the basic units are prepared in the light of directives received from above by the respective Committee of management or People's Council, as the case may be. But, before these are sent to the next higher authorities, they have to be discussed by the general body of the workers in the case of a factory or a farm. The plan

of a basic unit which is socialistic shows firm targets and represents what may be called direct planning. The plan for privately managed factories and farms which are not socialistic enterprises obviously cannot be so firm. In as much as the plan does not refer in such cases to individual factories or farms but only to administrative unit *viz.*, Hsiang, County or Province, planning in such cases is considered to be indirect planning. The targets are more of the nature of general guide posts rather than firm directives. In the earlier years when there were a large number of individual peasants and also privately owned industries, bulk of the planning in China used to be of an indirect type. But with the phenomenal spread of co-operative farming in the country during the last year and also conversion of a large number of private enterprises into joint State and Capitalist Enterprises, bulk of the planning in China has now become direct planning with effect from the current year.

4.25. The general technique of planning in China is more or less the same as in the U.S.S.R. The State Planning Commission first works out certain control figures for the whole nation in consultation with the Ministries concerned and after the approval of these control figures by the State Council, sends them down to the lower organs through two channels. One channel is the Ministries concerned under the Central Government and their counterparts in the Provinces and Counties. The other channel is the Provincial Government and Planning Commission and their counter-parts in the Counties. On the basis of these control figures, the various Ministries and local administrations draw up their draft plans which they submit to the State Council for consideration. A copy of each of these plans is sent to the State Planning Commission. The State Planning Commission then compiles a draft plan of national economy for the whole country and reports it to the State Council. After the State Council approves this national plan, it is submitted to the National People's Congress for approval. It is only after the approval of the National People's Congress has been obtained that the final plan is transmitted downwards to the lower organs through the two channels mentioned above *viz.*, the Central Ministries and Provincial Departments on the one hand and Provincial Administration and County Administration on the other.

Physical Planning.

4.26. Economic planning in China is carried out both in physical terms and in financial terms. In view of the fact, however, that in China there is still a fairly large private sector unlike Russia and a large part of the planning is still of the indirect type, financial planning plays a relatively more important part. Moreover, China does not yet possess the same volume of detailed statistical data as is possessed by Russia and cannot, therefore, undertake physical planning to the same extent. She

is, however, making very strenuous efforts to collect more accurate and more detailed and comprehensive data with a view to undertaking more rigorous physical planning. The main method adopted for physical planning is the method of "balances" as developed in Russia. But the application of this method of balances is not yet as precise as it is in Russia. The main reason is that there are many gaps in the data and also in the calculations and many of these gaps have to be filled in by what are no better than rough estimates. This partly explains why in China the plan has had to be revised rather frequently. Financial measures have to be adopted to a much greater extent in China than in Russia to correct any imbalances which may arise from time to time as a result of defective physical planning.

Financial Planning.

4.27. The Chinese authorities admit that in an economy which is not yet so socialistic as Russia's and which still retains certain aspects of mixed economy, financial planning is bound to continue as a most important method. In the 12 year programme, of course, financial aspects have not been examined at all. In the first five year plan and in particular in the annual plans, however, very careful examination from the financial angle is made. The annual plan is a very detailed financial plan,—practically as much as the annual budget in our country.

Financial allocations.

4.28. In the First Five Year Plan of China, it is proposed to invest altogether 76640 million Yuans (Rs. 15,328 crores) for economic construction and cultural and educational development during the period 1953-57. Out of this total, 74130 million Yuans (Rs. 14,826 crores) are directly State appropriations while 2510 million Yuans (Rs. 502 crores) will be furnished by the various Economic Departments under the central authorities and the provincial and municipal administrations themselves. This distribution of investments in the first five year plan is as follows:

Name	*Million Yuan*	*Percent of total*
	(Rs. in crores)	
Industrial Deptts.	31,320 6,264	40·9
Agricultural, Water Conservancy and Forestry Deptts.	6,100 1,220	8·0
Transport, Post and Tele-Communication Deptts.	8,990 1,798	11·7
Trade, Banking and Stock-piling Deptts.	2,160 432	2·8
Cultural, Educational and Public Health Deptts.	4,270 854	18·6
Urban Public Utilities	2,120 424	2·8
Circulating Capital for Economic Deptts.	6,900 1,380	9·0
Over-haul of Equipment in Economic Deptts.	3,600 720	4·7
Other Economic Items	1,180 236	1·5

4.29. Various Departments will receive 42,740 million Yuans (Rs. 8,548 crores) or 55·8 per cent for capital construction out of the above total expenditure for economic construction and cultural and educational development. An additional 5,300 million Yuans, (Rs. 1060 crores) will be invested in capital construction by various Departments according to the needs of their yearly plans for construction. If this sum of 5,300 million Yuans (Rs. 1,060 crores) is added to the 42,740 million Yuans (Rs. 8,548 crores) for capital construction mentioned above, the total investments of the State under the five year capital construction programme will constitute 62·7 per cent of the total national expenditure on economic construction and cultural and educational development.

Credit Plan.

4.30. Apart from these amounts which are included in the Investment Plan, there is a credit plan which covers long term as well as short term loans. This credit plan is prepared by the People's Bank of China and approved by the Ministry of Finance and the State Planning Commission. The long term loans included in the Credit Plan should be considered together with the investment plan mentioned above before the figures of investment in the Chinese plan can be compared with those of the Indian plan. We have discussed this point further in Chapter VIII.

4.31. The principal sources of revenue in China include profits of state-owned enterprises, state trading corporations, industrial and commercial taxes and bonds. In 1956, 48·19 per cent of the total revenue is expected from profits and depreciation value of state enterprises, 47.02 per cent from taxes, 2·5 per cent from bonds and loans and 2·29 per cent from other sources. In China. the main sources of taxation are industrial and commercial taxes. Agricultural tax amounts to 10·16 per cent of the total revenue for the year 1956. There is an income-tax on privately owned enterprises but individual employees do not have to pay any income tax. There is also no estate duty in .China. Although the absolute figures of taxes paid to the State by the privately owned enterprises are rising every year, their proportion in a relative sense is tending to fall. Direct taxes contribute about 30 per cent of the total revenue of China and indirect tax 70 per cent. The main direct tax is the income-tax on privately owned enterprises. The main industrial and commercial taxes include business tax, commodity tax, customs duty, salt tax, etc.

4.32. The size of the total investment in China is much larger than that in India. Although details were not given, a statement was made by Mr. Chou-en-Lai at the 8th Congress of the Chinese Communist Party held in September, 1956 that the actual amount of investment in the Second

Five Year Plan of China would be twice that spent on the First Five Year Plan. We were assured that inflation is not considered to be a serious danger because of three factors: (i) the entire wholesale trade is in the hands of the State and there is no private speculation, (ii) bulk of the revenue comes from the private and State-owned enterprises, (iii) the credit plan is invested largely in quick maturing schemes of production like agriculture, consumers goods industries, etc.

4.33. The Chinese authorities do not, however, rule out the possibility of a rise in prices altogether. At the 8th Congress of the Chinese Communist Party, Vice-Premier Chen Yun announced that the Government proposes to relax State trading to a certain extent and allow some rise in prices during the Second Five Year Plan period. He said that some of the measures taken during the First Five Year Plan period to restrict capitalist industry and commerce had now become unnecessary. Rigid adherence to the system under which Government supplied raw materials and contracted to buy the goods from factories had resulted in some factories not being interested in quality. He further said that the monopoly handling of goods by State wholesale organisations had also resulted in goods piling up in some localities while others were out of stock. State control of the market, which had restrained private merchants from buying raw materials, had resulted in monopoly on the part of the State trading organisations and lack of competition. This had meant that some agricultural products and subsidiary goods were not produced in sufficient quantities because the price was too low. He therefore announced 5 measures to correct these mistakes which he said had resulted from lack of experience.

These were:

(i) Factories should purchase their own raw materials and sell their own commodities except in the case of products which were essential to the national economy and in which there was no great variety such as cotton yarn, cloth and sugar. For these latter type of commodities, the Government should be sole supplier and purchaser. The state wholesale companies should not be allowed to allocate goods as hitherto but shops and stores should be encouraged to buy direct from factories so as to meet the needs of consumers and to ensure a variety in grades and quality.

(ii) A large part of industry, handicrafts, agriculture and commerce should be decentralised in production and management. If small factories were merged into large organisations, they would not be so adaptable and flexible to meet the needs of the market as small factories would be. Merging might result in an increase in production and also in uniformity of goods but this could not meet the consumers' needs. Very large cooperatives should be

turned into small group cooperatives and in commerce too, appropriate decentralisation must take place. Small traders should continue to manage their own business within the cooperative group for a long time to come.

(iii) Methods of market management originally designed to prevent capitalist speculative activities would be maintained for basic goods but will be relaxed in the case of some consumer goods. The policy should be freedom of purchase by all State and cooperative stores. This would avoid keeping down production because of too low prices.

(iv) Price policy should be determined in the interest of raising production.

(v) Factories should fix their own plans and, in this, they should be guided by market requirements. Mr. Chen Yun clarified that grain, cloth and such other important consumers' goods would still continue to be purchased and supplied only by the State but, simultaneously, a free market would be also encouraged within the planned economy. The free market would include a little more than one-quarter of the total value of retail consumers' goods this year.

4.34. The Chinese authorities expect that if increases of agricultural production materialise according to the 12-year programme, there need not be any fear of inflation at all. The increase of agricultural production which is their most important quick maturing production scheme, is, therefore the lynch-pin in Chinese planning.

CHAPTER V

TECHNIQUES OF AGRICULTURAL PLANNING

Agricultural Planning in China and other People's Democracies.

5.1. As has been explained in the previous chapter, the general principles of planning in China are similar to those followed in Soviet Russia and other people's democracies. The procedure and technique of agricultural planning in China are, however, somewhat different from those in Soviet Russia and are more like those followed in Poland and Czechoslovakia. This difference seems to have arisen from the fact that while in Soviet Russia there are only a lakh and odd of big State and collective farms over which the State is able to exercise a very close control through the machine tractor stations and otherwise, in China, there are over a million of relatively small cooperative farms besides an appreciable number of individual peasants over whom the control of the State has necessarily to be somewhat loose and indirect. Moreover, in the Chinese economy there still exists a considerable amount of private ownership of means of production and private buying and selling in open markets. The Chinese authorities had, therefore, to modify the procedure as well as technique of agricultural planning as evolved in Soviet Russia to a considerable extent to make it suit the special conditions of the small farm economy obtaining in their country.

5.2. For instance, price policy and the provision of incentives play a much more important role in Chinese agriculture than in Soviet Russia. From the recent statements made by the Chinese leaders, it appears that this may be even greater during the Second Five Year Plan period than it has been in the First. As in all other communist countries, there is an emphasis in China also on the importance of maintaining a balance between the incomes of industrial workers and farmers. But in China, the emphasis on farmers is relatively much greater than elsewhere. For instance, Mr. Teng Tse-hui, one of the agricultural experts of the Central Committee of the Chinese Communist Party urged at the recent Congress of the Party, the importance of paying due attention to the interests of farmers and warned that if there was not a proper ratio between agricultural production and industrial development, relations between workers and peasants would 'become tense'. He also emphasised the need for better relationship between cooperatives and their members and said that cooperatives should concentrate on

major crops such as grain and cotton and individual peasants should be encouraged to produce subsidiary crops. In distributing the produce, the policy must be for the co-operatives to keep less and give more to members. Mr. Li Hsien-nien, Minister of Finance, speaking at the same Congress, emphasised the need of encouraging peasants to grow more subsidiary products by providing better facilities and higher prices. He said that the State would raise the procurement price of certain agricultural products and also subsidise farmers who had to transport their products over hilly or difficult terrain. He advocated higher prices for agricultural products as that would greatly increase production and would also increase agricultural incomes. He emphasised that there should be a certain adjustment in the prices of industrial goods so that the consumption needs of the peasants could be met. He announced certain adjustments which he said would mean a heavy reduction in the State's income. But he emphasised that these adjustments would increase peasants' income and hence their purchasing power. In course of time, it would increase production and thus increase the State's income which would compensate for the present loss.

5.3. The Chinese authorities are encouraging cooperative farming as much as possible since, among other advantages, it enables direct planning to be done on the basis of individual farms. Their ultimate objective is to pass on from peasant farming first to cooperative farming and then to collective farming at the earliest opportune moment. But as has been explained in another chapter, from the very beginning, they have been very careful in their handling of the individual peasant as distinct from the non-cultivating land-owner.

5.4. In China, a distinction is made between the feudal elements in agriculture and the capitalist elements. The non-cultivating land owner is considered to be a feudal element and his lands have been confiscated without any compensation. The land-owner who cultivates himself is considered to be a capitalist element. While the Chinese authorities are pursuing a vigorous policy of substituting peasant proprietorship, which is in their view essentially capitalist agriculture, by cooperative farms, which is socialist agriculture, they have not confiscated the lands of any land-owner who cultivates them himself unless he has been accused of crime against the State and the regime. There has not been even any talk of imposing ceilings on the holdings of land-owners who cultivate their own lands. After feudal landlordism was abolished, there was no tenant left in China and all farmers had become proprietors. The Chinese classified the peasant proprietors into three categories, *viz.* (i) rich peasants, *i.e.*, peasants who have enough land which requires hiring of agricultural labour and who produce a marketable surplus; (ii) middle

peasants, *i.e.*, peasants who possess just enough land to be self-sufficient and to have whole-time work for themselves and who do not have to hire agricultural labourers ordinarily; and (iii) small peasants, *i.e.* peasants who do not have sufficient land for their own livelihood and employment and have to work part-time as agricultural labourers. To begin with, the rich peasants were left to themselves and in fact prohibited for some time from joining cooperative societies because it was felt that they might prove to be a discordant element. The middle peasants were encouraged to cooperate with the small peasants and form mutual-aid teams or cooperative societies and were given special financial and technical assistance on their doing so. Although cooperative farming has been the article of faith with the Chinese authorities, we were told that there was no attempt to compel the Chinese peasants to join a cooperative farm. All that the Chinese authorities did was to carry on intensive propaganda and to regulate the Chinese peasants indirectly through sales and purchases and other controls and also through the monopoly of credit and offer them other inducements for joining first a mutual-aid team and then a cooperative farm of elementary type (in which there is separate dividend for land besides remuneration for labour) and only when they had gone through these processes that they were pursuaded to join a collective farm or what the Chinese call a cooperative farm of a higher type (in which dividend for land is abolished and the remuneration is based on labour alone). Price policy, technical assistance, provision of consumers' goods as well as producers' goods like fertilizers and in some cases contracts for purchase of the produce at a pre-determined price are the various means through which the Chinese Government is trying to make the Chinese farmer to follow the planned pattern. Although there is production planning for State and cooperative farms, there is no such planning for the individual peasant proprietors whose number is rapidly declining. In fact 92 per cent of the peasant households in China have already joined cooperative farming and only 8 per cent still continue as individual peasants. Planning for such individual peasants is usually done on a county basis (or a hsiang basis if the number of such peasants is large) by the County Planning Office in consultation with the representatives of the peasants. The crop plan for a County which is an integral part of the national annual plan is announced sufficiently early before the sowing period and indications are given as to how much of each crop is to be produced and so on. Simultaneously, the Government purchase prices as also the quantity to be purchased by Government are also announced and, in some cases, the Government enters into a contract either directly or through the County and Hsiang Cooperative Societies with each cooperative farm or each individual peasant in regard to the quantities he would sell to the

Government at the announced price. In some cases, there may not be any legal contract but the plan of the cooperative farm itself may be virtually treated as a contract. This contract or plan is a major means by which a farmer is made to adhere to the target. Fertilizers, credit, etc., are also given to the farmers according to this contract or plan.

The Procedure.

5.5. The procedure for preparing the agricultural plan in China is to work out first the control figures, prepare a draft plan and approve the plan that is proposed to be sent out to the lower organs of Government. The State Statistical Bureau first make available all the relevant statistical data which they collect either as a matter of routine or through special surveys. It is on the basis of these data that the Ministry of Agriculture and the State Planning Commission make preliminary estimates regarding the control figures for the next plan period. The technical experts of Ministry of Agriculture try to estimate the technical possibilities. On the other hand, the State Planning Commission takes a preliminary view of the various sectional plans for the economy and makes rough calculations as to the quantities of different agricultural products that would be needed by the economy for internal consumption and export and the resources of different kinds that could be made available for agriculture.

Bureau of Planning of the Ministry of Agriculture.

5.6. There is a Bureau of Agricultural Planning in the Ministry of Agriculture with a technical staff of about 76 of its own. Besides the Planning Bureau of the Ministry as a whole, there are small planning units in the other major Bureaus of the Ministry of Agriculture. These units work under the technical supervision of the Director of the Planning Bureau of the Agriculture Ministry although they are under the administrative control of the Directors of their respective Bureaus. Most of the staff in the Planning Bureau as well as Planning units in other Bureaus of the Ministry are agricultural economists and statisticians although there are a few agronomists too. It is the responsibility of each planning unit to formulate plans for their respective bureaus and of the Planning Bureau to do the same for the Ministry as a whole. The schemes prepared by the different technical bureaus are scrutinised, adjusted and coordinated by the Planning Bureau through a series of inter-bureau consultations before the control figures or targets for the Ministry as a whole are formulated. The Planning Bureau of the Ministry maintains close liaison with the Planning Commission and consults the latter wherever necessary. The nature of the work done by the Plannnig Bureau of the Agriculture Ministry will be best understood from the following description of its organisation.

5.7. There are altogether five departments in the Planing Bureau of the Ministry of Agriculture:

(1) *Department of Comprehensive Planning.*—The main function of this department is to prepare the draft annual plan, analyse data regarding investment, loans, supplies, purchasing power in the hands of the farmers, prices, etc., work out balances for the various schemes prepared by the other bureaus of the Ministry and co-ordinate their work and give necessary directions regarding planning work.

(2) *Department of Long-term Planning.*—It is responsible for all work connected with long-term programmes *e.g.*, land reclamation projects, programme for the development of river-valleys, crop-planning on regional basis, rational distribution of production power in agriculture in different regions, etc.

(3) *Statistical Department.*—Its main function is to collect statistical reports including progress reports on agricultural programme submitted by the various provincial authorities as well as other Bureaus of the Ministry, organise investigation work with a view to studying economic norms of production, distribution, consumption, etc., and after the plan is finalised to keep track of the implementation of the various schemes included in the plan. This department receives technical guidance from the State Statistical Bureau wherever necessary but is entirely under the administrative control of the Planning Bureau of the Ministry of Agriculture. This department also receives independently, through its counter-parts at the provincial level, copies of all statistical estimates of agricultural area, yield, output, etc., collected by the lowest administrative units and collated at successive higher levels.

(4) *Department of Finance and Accounts.*—It keeps an account of the utilisation of the agricultural funds allocated in the plan, works out annual and long-term plans for agricultural finance, studies cost-accounts of various schemes and fixes norms of production expenditure for different items

(5) *Department of Labour and Wages.*—Its main function is to work out the detailed allocation of the share of wages fund that is assigned by the Ministry of Labour to the Ministry of Agriculture and work out norms of working points and wages in State enterprises under the Ministry of Agriculture, *e.g.*, State Farms, Tractor Stations, Land Reclamation works, Research Institutes, etc.

5.8. As copies of all statistical returns relating to agriculture which are sent up by the Hsiang authorities to the County and Provincial Statistical Bureaus also come independently to the Planning Bureau of the Ministry of Agriculture, the Bureau is enabled to keep track of the latest statistical information and compilation of agricultural data

by the State Statistical Bureau. The Planning Bureau in the Ministry of Agriculture also prepares tentative control figures in consultation with the other Bureaus in the Ministry and with the Agriculture Departments in the Provinces.

Bureau of Agriculture and Forestry of State Planning Commission.

5.9. While this work is in progress in the Ministry of Agriculture, simultaneously in the Planning Commission also certain tentative control figures are worked out. The main department in the Planning Commission responsible for working out control figures for agriculture is the Bureau of Agriculture and Forestry of the Planning Commission which is responsible for maintaining liaison between the Planning Commission and four Ministries *viz.*, Ministry of Agriculture, Ministry of Water Conservancy, Ministry of Forestry, and the Bureau of Meteorology. Until June last, this Bureau had a staff of about 80. But now with the separation of current and long term planning half of that staff has been taken away to form a similar Bureau in the State Economic Commission. While the Bureau of Planning in the Ministry of Agriculture lays more stress on the technical aspects of the problem and works out the balances from the point of view of agriculture, the Bureau of Agriculture and Forestry in the Planning Commission roughly works out the control figures for agriculture in the perspective of the over-all economy as a whole and on the basis of the various balances worked out by the different Economic Bureaus of the Planning Commission.

Preparation of control figures.

5.10. This is followed by a series of informal consultations between the two Bureaus in the Ministry and the Commission and, on the basis of these consultations, the Ministry of Agriculture proposes certain draft control figures to the Planning Commission. These draft figures are examined from the over-all point of view by the Bureau of Agriculture and Fisheries in the Planning Commission in consultation with other concerned Bureaus. On the basis of this examination, the Planning Commission prepares certain final control figures which it puts up to the State Council. After the approval of the State Council has been obtained, these control figures are sent downwards through two channels. One channel is the State Planning Commission at the Centre. the Provincial Planning Commission, the County Planning Commissions, etc., and the other channel is the Ministry of Agriculture in the Centre, the Provincial Agriculture Department, county Agriculture Departments, hsiang authorities, etc. In the light of these control figures, the various Provincial and other subordinate agriculture departments work out control figures for their respective areas in consultation with the local Planning Commission and it is on the basis of these latter figures that the various cooperative farms and county and hsiang authorities prepare their own plans. Although there is no such planning so far as the individual peasant is concerned; he is persuaded to accept higher production targets

and some estimate is made at the county and hsiang levels in regard to the likely target of production of the individual peasants. These figures are consolidated at the County level and then at the Provincial level and sent up to the Ministry of Agriculture and also submitted through the local branch of the Planning Commission to the Planning authorities at the province and at the Centre. On the basis of this information, the Central Ministry of Agriculture prepares a draft plan which it submits to the Planning Commission. The Planning Commission, in its turn, prepares a draft plan for the country as a whole on the basis of such information received from different Ministries. This is put up to the State Council and, after approval by the State Council, placed before the National People's Congress. After approval by the Congress, the final plan and its various targets are sent down to the Ministries and to the respective administrative authorities in the provinces, counties and hsiangs.

5.11. The procedure for the preparation of the annual plan is almost the same as the one which has been described above for the Five Year Plan. The only difference is that in the preparation of the five year plan somewhat longer time is taken because more calculations and estimates have to be made. For the annual plan, there is a fixed time table *viz.*, Control Figures must be sent out by August September, draft proposals must come up from the provinces by November/December and the final plan must be issued by February/March (please see chart at the end of this chapter). As has been mentioned earlier, henceforward the preparation of the annual plan and the five year plan will be done by two different organisations at the Centre *viz.*, the State Economic Commission and the State Planning Commission respectively.

Basis of targets.

5.12. From our discussions with the Chinese authorities at various levels, it appeared that the fixation of long term targets for agricultural production is done on a rather rough and ready basis. For the 12 year programme of 1956-67, provisional targets have been proposed simply by projecting the existing yields of a few selected crops in the main regions of the country by certain percentages. For instance, in North China the yield of paddy per mou was 150 catties (1000 lbs. per acre) in 1955. The best collective farms in that area have been able to produce as much as 500 catties per mou (3346 lbs. per acre). The target for 1967 has, therefore, been fixed at 400 catties per mou (2677 lbs. per acre) as the average for all the farms. Similarly, the target of production of paddy for Central China has been fixed at 500 catties per mou (3346 lbs per acre) for 1967 as against the average of 208 catties per mou (1392 lbs. per acre) in 1955 on the basis of the fact that some of the best farms have already been able to achieve an yield of 600 catties per mou (4,015 lbs. per acre). The comparable

figures for South China are 800 catties (5354 lbs. per acre), 400 catties (2677 lbs. per acre) and 1,000 catties (6692 lbs. per acre) per mou respectively.

5.13. No detailed schemes have yet been worked out as to how these targets are to be achieved. Only certain general recommendations have been made. A general statement has been made that these targets should be achieved partly by what the Chinese call social reform and partly by technical reform.

5.14. By social reform is meant agrarian reorganisation in general and the organisation of peasant holdings into cooperative farms in particular. It is presumed that this transformation by itself will mean a substantial increase in production inasmuch as it will ensure better organisation, more economic use of available factors of production, accelerated adaptation of new techniques, more intensive cultivation through the release of greater labour power, etc. It is proposed that areas where cooperation is on better foundations and where a number of cooperatives of the advanced form are already functioning should complete the change-over to cooperation of advanced form by 1957. Each district of the remaining areas should set up and run in 1956 one or more large cooperatives of advanced form (each with a hundred or more peasant households) to serve as an example. By 1958 they too should practically complete cooperation of advanced type. As will be explained later, the organisation of cooperative farms is considered to be the lynch-pin of agricultural planning and development in China and it is primarily through this social reform or agrarian reorganisation that the targets are proposed to be achieved during the 12-year period 1956-67.

5.15. As regards technical reforms, the chief steps are to create more production potential and to popularise better techniques. The former includes (a) water conservancy projects and water and soil conservation, (b) use of improved farm tools and gradual introduction of mechanised farming, (c) efforts to discover every possible source of manure and improve methods of fertilizing, (d) extension of the use of the best and most suitable strains, (e) soil improvement, (f) extension of multiple cropping areas, (g) planting more high yielding crops, (h) improving farming methods, (i) wiping out insect, pests and plant diseases, (j) opening up virgin and idle lands and extending cultivable areas. The latter include the following: (i) Provinces, Municipalities, etc., are advised to collect data on the experience of the best cooperatives in their own areas in increasing yields, compile and publish at least one book a year so as to spread this knowledge as widely and as rapidly as possible, (ii) Agricultural Exhibitions (iii) Conferences of model peasants called at regular intervals by provinces, municipalities, administrative regions, counties, districts, hsiangs, etc., with awards and citations to peasants who distinguish themselves in increasing pro-

duction, (iv) visits and emulation campaigns, the exchange of experience; and (v) imparting technical knowledge and encouraging peasants and cadres to take an active part in learning better techniques.

5.16. The tasks that have been laid down in the 12 year programme for these techniques for increasing production are of a very broad character as will be seen from the following examples:

(a) Through large-scale water conservancy projects undertaken by the State and small scale water conservancy projects undertaken by local Governments and agricultural producers' cooperatives, an attempt should be made virtually to eliminate all ordinary floods and droughts in 7 to 12 years starting from 1956. During the 12 year period starting from 1956, small hydro-electric power stations should be built where water power is available, each of these stations to serve one or several hsiangs.

(b) Within 3 to 5 years starting from 1956, 6 million more ploughs with two wheels and two shares should be put into use together with a large number of sowers, cultivators, sprayers, dusters, harvesters, shellers and silage cutters. Good repair services should be provided.

(c) Within 12 years starting from 1956, local Governments and agricultural producers' cooperatives in most areas should have made themselves responsible for providing more than 90 per cent of all manures and other fertilisers needed—and in some places the whole of it. Local Governments should take active steps to develop the manufacture of phosphate and potassium fertilisers, extend the use of bacterial fertiliser and collect and utilise to the fullest extent, the urban waste and other sources of manure. At the same time, the State will vigorously promote the chemical fertiliser industry.

(d) Energetic steps should be taken to breed and extend the use of improved strains suitable to local conditions and encourage work to improve seed. Within 2 or 3 years starting from 1956, selected seeds should be in general use for cotton growing and within 7 to 12 years the same should be true of such important crops as rice, wheat, maize, soya, millet, kaoliang, potatoes, rape, sesamum, sugarcane, tobacco and hemp. All agricultural producers' cooperatives should set aside land specially for growing seed as such. State farms should function as centres for increasing the amount of selected seed.

(e) In 12 years starting from 1956, the average multiple crop index (base: area under multiple crops in 1955—100) for various areas should be raised to the following levels:

(1) Areas south of Wuling Mountains—230 per cent.

(2) Areas north of Wuling Mountains and south of the Yangtze River—200 per cent.

(3) Areas north of the Yangtze River and south of the Yellow River, Tsingling Mountains and River Pailung.—160 per cent.

(4) Areas north of the yellow River, Tsingling Mountains and River Pailung and south of the Great Wall—120 per cent.

(5) In areas north of the Great Wall, Multiple Crop Areas should also be expanded as much as possible.

(f) In the 12 years starting from 1956, the area under rice should be increased by 310 million mou (51 million acres) maize by 150 million mou (25 million acres) and potatoes by 100 million mou (16 million acres).

(g) Deep ploughing, careful cultivation, proper rotation of crop, inter-cropping and close-planting, sowing in good time, thinning out and protecting young plants and improving field work should be carried out extensively to bring about good yields and good harvest.

(h) In 7 or 12 years starting from 1956 all pests and plants diseases should be virtually wiped out. The four evils, rats, sparrows, flies and mosquitoes should be completely eliminated during this period.

(i) The State should reclaim waste land in a planned way and wherever conditions permit, agricultural producers' cooperatives should also be encouraged to organise branch cooperatives to carry out such reclamation.

(j) The area cultivated by State farms should be increased in the 12 years starting 1956 from the 1955 figure of 13·36 million mou (2·2 million acres) to 140 million mou (23 million acres).

(k) In the 12 years starting 1956, every possible bit of the denuded waste land and mountains should be clothed with greenery. For this purpose agricultural producers' cooperatives should set up decentralised nurseries of their own to grow saplings in addition to nurseries started by the State.

(l) Agricultural producers' cooperatives should try to make fuller use of man-power and raise labour productivity in the 7 years beginning with 1956. Every able-bodied man in the countryside should be able to put in at least 250 working days a year. Serious efforts should be made to draw women into the work of agricultural and subsidiary production. Within 7 years, every able-bodied woman in the countryside should, besides the time usually spent in household work, be able to give at least 120 working days a year to productive work.

(m) A systematic effort should be made to start, improve and extend organisations undertaking research in agricultural science and those providing technical guidance. In the 12 years from 1956, agricultural departments at all levels should try to meet the needs of cooperative economy by training 5 to 6 million experts of primary and intermediate grades for technical work in agriculture, forestry, water conservancy, livestock breeding, veterinary work, farm management and accounting for agricultural producers' cooperatives.

(n) In 7 to 12 years from 1956 depending on local circumstances, a net work of hydrographical and meteorological stations and posts should be completed so as to improve the work of providing agriculture with reliable weather and meteorological forecasts.

(o) In 1957, there must be a Rural Credit Cooperative in practically every hsiang to provide credit and encourage savings.

5.17. These various measures have been prescribed for the 12 year programme only in a general way and details have yet to be worked out. No estimate has been made as yet as to how much of the additional production will be due to social reform and how much due to technical reform and in the latter case how much is expected from each individual item. Moreover, the 12 year programme is still a programme and not a plan in the sense that only broad targets for agriculture have been laid down and no attempt has yet been made to work out balances between different sectors of agriculture or between agriculture and other branches of the economy. The 12 year programme has been announced as a set of goals to be kept in view by the various planning authorities. It is in the light of this 12 year programme that the Second Five Year Plan is being now worked out in detail. It will yet take some time to be finalised but it has recently been announced that agricultural production will be increased by 35 per cent during the Second Plan period.

5.18. In preparing the agricultural targets for the First Five Year Plan also, the same broad and overall method was adopted as has been done for the preparation of the 12 year programme. While in the 12 year programme, broad targets of production have been laid down only for 3 main regions, northern, central and southern, in the First Five Year Plan, the national target has been broken down into provincial and county targets. All these targets have, however, been fixed not so much in terms of "production potential" created by different types of measures proposed to be taken as has been the case in India, but in terms of over-all increase in production expected in different provinces and counties. The figures of production in the different provinces and counties for the

base year 1952 were taken as starting point and certain rough estimates were made regarding the possibility of increasing production as a result of adopting various measures in the area concerned. Some of these measures are—

(a) Covering about 1/3rd of all the peasant households in the country by agricultural producers', cooperatives.

(b) Setting up 3,038 State farms of which 141 will be mechanized with 5,146 tractors (averaging 15 H.P. each). The total area under State farms will be increased from 4,940,000 mous (813,618 acres) in 1952 to 16,872,000 mous (2,778,818 acres) in 1957.

(c) Supplying the peasant with about 18 lakh 2 wheeled, single and double shared ploughs, 500,000 other improved animal drawn ploughs and a large number of improved agricultural implements.

(d) Undertaking large number of major, medium and minor water conservancy projects and supplying the peasants with 681,000 water wheels and setting up water pumping stations with a total capacity of 57,000 H.P. The total area under irrigation will be increased by 72 million mous (11.86 million acres).

(e) Supplying the peasants with 277,000 tons of rock phosphate, 18,600 tons of superphosphate, 4,860,000 tons of ammonium sulphate and ammonium nitrate and 14,570,000 tons of bean cakes during the period 1953-57. During the same period, area under green manure crops will be increased by about 35,430,000 mous (5,835,321 acres). A vigorous campaign will be launched to encourage the peasants to take up composting on a large scale and to use all organic material including night soil for manurial purposes.

(f) Bringing additional 38,680,000 mous (6,370,596 acres) of land under cultivation partly by organizing peasants to reclaim small patches of waste land and partly by using machines to reclaim large patches of waste land.

(g) Studying best methods of cultivation devised by peasant households or agricultural producers' cooperatives which have produced record harvests and encouraging other farmers to adopt these methods and popularising suitable methods of close planting of wheat, paddy and cotton.

(h) Making vigorous efforts to promote the wide-spread use of improved seeds.

(i) Taking large scale action to combat plant diseases and insect pests and supplying the peasants with 139,000 tons of insecticides and 1,436,000 sprinklers and atomisers.

(j) Setting up 194 tractor stations which will have a total of 2,897 tractors and serve an area of 3,540,000 mous of land (583,038 acres).

(k) Expanding area sown to industrial crops.

(l) Undertaking research for the improvement of farm tools and methods of cultivation.

(m) Completing a survey of 100 million mous (16·47 million acres) of waste land with a view to finding out how much of that is suitable for large scale reclamation during the second five year plan.

(n) Increasing the number of horses by 36 per cent, oxen 30 per cent, mules 20 per cent, donkeys 86 per cent, sheep 80 per cent, goats 78 per cent, pigs 54 per cent.

(o) Increasing the output of acquatic products by 68·5 per cent.

(p) Planting 66,740,000 mous (10,992,978 acres) with new forests and 23,433,000 mous (3,859,415 acres) with shelter belts and replanting 4,220,000 mous (695,034 acres) of denuded lands in State forests.

(q) Setting up 1,083 additional observatories, weather stations, or weather posts with a view to collecting meteorological data to serve better the needs of agriculture, fisheries, water conservancy and navigation.

5.19. It is expected that as a result of all these measures, the value of output of agriculture and subsidiary rural production will increase from 48,390 million yuans (Rs. 9,678 crores) in 1952 to 59,660 million yuans (Rs. 11,932 crores) in 1957. This means an increase of 23·3 per cent in 1957 as compared with 1952, giving an average annual increase of 4·3 per cent. The output of grain will increase from 327,830 million catties (or 161,325 thousand tons) in 1952 to 385,620 million catties (or 189,764 thousand tons) in 1957. This means an increase of 17·6 per cent in 1957 as compared with 1952, giving an average annual increase of 3·3 per cent. The output of cotton will increase from 2,610 million catties (or 1,284 thousand tons) in 1952 to 3,270 million catties (or 1,609 thousand tons) in 1957. This means an increase of 25·4 per cent in 1957 as compared with 1952, giving an average annual increase of 4·6 per cent. A statement giving some details of the targets of production of various agricultural commodities is given at the end of this chapter.

5.20. From the technical point of view, the Chinese method of fixing targets would perhaps appear to be more of a guess work than otherwise. At the same time, it must be admitted that where bulk of the additional production is expected as a result of social reform, *viz.*, the

popularization of cooperative producers' societies and only a part from technical efforts like greater use of fertilizers, better seed, better use of water, etc., it was not perhaps as important for China as it has been considered for India to work out the targets of "production potential" in terms of the various technical measures taken. On the other hand, the adoption of this rough and ready measure has also introduced a considerable element of flexibility in the targets. For instance, the target of additional grain production for 1953 was at first fixed at 30 per cent but later on when experience showed that that was too high a target, the target of grain production in the first five year plan for the five year 1953 to 1957 was fixed at only 17:6 per cent. Again, when in 1955, a bumper crop was reaped, much higher targets were framed on that basis for the 12 year programme. The method adopted by the Chinese planners so far for formulating both the 1st Five Year Plan and the 12 year programme would appear at first sight, to be no more dependable than ours in case we in India had fixed targets for States and districts at 80 to 90 per cent of the yields obtained by our *Krishi Pandits* and as a result of drought in one year reduced the over-all target itself to half and as a result of a bumper crop two years later raised it by 2 or 3 times.

Annual Planning.

5.21. Although no detailed calculation has gone into the fixation of the 5 year or 12 year targets for agricultural production by the Chinese planning authorities, we were informed by the Ministry of Agriculture that, for individual years, detailed targets of inputs have been estimated and the results to be expected therefrom calculated with a view to making provision for the various materials required. For instance, in 1956 the output of grains (including soya beans) is proposed to be increased by 31,000 million catties (34,171 million lbs.) over the production of 1955 amounting to 367,000 million catties. (439,339 million lbs.). This target is proposed to be achieved through a number of measures for which definite provision has been made in the annual plan for 1956. These measures are:—

(a) *Water conservancy.*—160 million mous (26·35 million acres) of land will be irrigated in 1956 of which 80 million mous (13·18 million acres) are expected to benefit in production during this year itself. On the assumption that provision of irrigation increases the production of grain by 100 catties per mou (669 lbs. per acre) on the average, this newly irrigated area of 80 million mous (13:18 million acres) is expected to achieve as much as 24 per cent of the target of additional production of 31,000 million catties (34,171 million lbs.) of grains.

(b) *Fertilizers and manures.*—It is proposed to use 350,000 tons of commercial fertilizers (70 per cent nitrogen and 30 per cent phosphate during 1956). Moreover,

the use of animal and human manure will be also intesified very substantially. On the assumption that one catty of chemical fertilizers will increase the output by 4 catties (4·41 lbs.) and 2,000 catties (2,204 lbs.) of animal and human manure will increase production by 5 catties (5·51 lbs.), it is expected that the amount of fertilizers and manures proposed to be used will help to achieve 33 per cent of the proposed target of additional grain production.

(c) *Improved methods of cultivation.*—It is proposed to raise more than one crop in 22 million mous (3.62 million acres) of additional land. On the assumption that multiple cropping increases the yield by 150 to 200 catties per mou (1,004 to 1,339 lbs. per acre) on the average it is expected that this measure alone will help to achieve 11 per cent of the planned target of additional production of grains.

(d) *Reclamation.*—It is proposed to reclaim an additional 28 million mous (4.61 million acres) of land. On the assumption that reclamation gives an additional production of 150 catties per mou (1,004 lbs. per acre), about 12 per cent of the target of additional production of grains is expected to be achieved by this means.

(e) *Improved tools.*—In 1956, it is proposed to introduce 1·5 million double shared and double wheeled ploughs. On the assumption that use of these ploughs will help to increase production per mou by about 4 catties (26.77 lbs. per acre), 4 per cent of the target of additional production is expected to be achieved by this means.

(f) *Better seeds.*—It is proposed to use improved seeds on an additional 40 million mous (6.59 million acres) of land in 1956. On the assumption that improved seeds increase output by 8 to 10 per cent this measure will help to achieve 2 per cent of the total target of additional production of grains.

(g) *Planting high yielding crops.*—By planting high yielding crops like potatoes in 28 million mous (4.61 million acres) of land and maize in 20 million mous (3.29 million acres) it is proposed to achieve 14 per cent of the target of additional production. The assumption is that potatoes give an additional yield of 120 catties per mou (803 lbs. per acre) and maize gives an increased production of 50 catties per mou (335 lbs. per acre) over the yield of the miscellaneous crops that are normally produced in those areas.

5.22. Besides the above measures it is proposed to popularize improved methods of cultivation like close planting, sowing in good time, improving field work, etc., and also to undertake plant protection measures which will help both in increasing production and providing some protection against pests and diseases and natural calamities. For plant protection alone 220,000 tons of fungicides

and insecticides and 4.33 million sprayers and dusters will be distributed during the year 1956. But as in India, Chinese planning authorities do not take any separate credit for these measures for the purpose of calculating additional production potential. They assume that the credit for additional production desired from the former measure is being already taken in the yardsticks for other items mentioned above and the latter measure provides merely insurance which is not so much increase of production over normal as a prevention of decline in production below normal.

5.23. These yardsticks have been determined by the Research Institutes on the basis of experience in key co-operatives in key places. They are not based on any random sample surveys on farmers' fields. As has been explained above, the Chinese planners use them only for a limited purpose *viz.*, for working out the details of an annual plan—more from the point of view of working out the works and supplies required rather from the point of view of working out actual production potential. Actual production potential, they insist, depends not only upon technical reforms or provision of works and supplies but also upon social reforms *viz.*, the development of co-operatives and the mobilization of the efforts and enthusiasm of the farmers. The latter cannot be measured by any yardstick of the above type. For estimating the total production likely to be obtained from the planned effort, therefore, it is necessary in their opinion to take a comprehensive view of developments in different countries, provinces, etc. Hence, for the five year plan they prefer to base their estimation of targets of additional production on the following factors:—

(a) *The present status of production,* i.e., *area yield per mou and output in the particular region.*—For this purpose they carefully examine the statistics of recent years.

(b) *The additional effort that is likely to be put in by the farmers as a result of development of co-operation.* For this purpose, they examine the performance of the best co-operatives in particular regions and make suitable adjustments for the average farms in the area.

(c) *Technical improvements that are considered feasible.*—These are estimated on the basis of the experience of Research Institutes and the resources likely to be available.

5.24. Apart from the above measures, they also make certain estimates of relative prices to be maintained in different areas for important crops and funds to be invested by the State by way of loans and

grants. These estimates both in regard to prices and investments are only broad figures for the five year plan, but are worked out in a considerable detail for the one year plan.

5.25. For instance, in Shantung in the Yellow River Region of North China price of millets was fixed at 9.75 yuans per hundred catties (or Rs. 14.5 per md.) in 1955 and the price of one catty of ginned cotton was fixed as equivalent to the price of 7.84 catties (8.64 lbs.) of millets. In Honan, in the Yangtse Region of Central China the price of rice was fixed at 9.9 yuans per hundred catties (or Rs. 14.8 per md.) in 1955 and the price of one catty (1.10 lbs.) of ginned cotton was fixed as equivalent to the price of 8.44 catties (9.30 lbs.) of rice. Similarly in Kwangtung in South China the price of rice was fixed at 9.9 yuans per hundred catties (Rs. 14.8 per md.) in 1955 and the price of one catty of raw jute was fixed as equivalent to the price of 1.5 catties (1.65 lbs.) of rice. These prices and ratios are revised from year to year according to changes in the economic conditions of different areas, the relative emphasis put on the production of these alternative crops in the five year plan and the incentives considered to be necessary for the attainment of the planned targets. The Chinese planning authorities take good care that the farmers are given sufficient incentive by way of attractive prices. Between 1950 and 1955, prices were increased by 15.7 per cent for grains and 15 to 45 per cent for hemp, silk, cocoon, tea, oilseeds and cotton.

5.26. As has been explained in the previous chapter, in China there are two kinds of plans, *viz.*, direct and indirect. Direct plans are for State enterprises *e.g.*, State farms. For these, definite directive can be given and firm targets fixed. Indirect plans are those for cooperative farms, individual peasants, etc. These latter plans cannot be carried out as definite directives and targets fixed can by no means be firm but are only indications of general direction in which progress should be made. Their implementation depends very largely on the conditions created by way of works and supplies, credit given, relative prices fixed and other incentives provided. Some idea of the effort put in by the State for the development of agriculture may be had from the fact that, in 1955, the State spent as much as 1,500 million yuans (or Rs. 300 crores) for the development of agriculture, forestry, water conservancy and meteorology. Out of this, the Ministry of Agriculture alone spent 450 million yuans (or Rs. 90 crores) of which 7 per cent was for secondary agricultural education and training of agricultural cadres (excluding higher agricultural education for which funds are provided separately by the Ministry of Higher Education), 16 per cent for technical and scientific research, 3 per cent for plant protection, 4 per cent for animal husbandry and veterinary science, 4 per cent. for soil and water conserva-

tion and reclamation of waste land, 10 per cent for the promotion of mutual aid and cooperation, 34 per cent. for State agricultural enterprises like State farms, serum manufacturing factories, etc., 5 per cent for machine and tractor stations and 17 per cent. for other miscellaneous purposes. The above figures do not include the salaries of the administrative staff of the Ministry of Agriculture which is shown in the budget of the State Council and the amount spent for higher agricultural education which is shown separately in the budget of the Ministry of Higher Education. These figures do not also include the loans amounting to 1000 yuans (or Rs. 200 Crores) that were made to farmers by the State Agricultural Bank in that year.

5.27. In the First Five Year Plan of China, the total amount of State investment in agriculture, water conservancy and forestry is 8400 million yuans or roughly Rs. 1,680 crores for a period of five years. The break-up is as follows:

2680 million yuans (or Rs. 536 crores) for capital construction in agriculture, water conservancy and forestry;

2840 million yuans (or Rs. 568 crores) in miscellaneous expenditure allocated by the State to agriculture, water conservancy and forestry departments;

300 million yuans (or Rs. 60 crores) allocated to the army to reclaim waste land;

1060 million yuans (or Rs. 212 crores) allocated as relief fund for rural areas; and

1520 million yuans (or Rs. 304 crores) granted by the State for giving additional agricultural loans.

As has been explained in the previous chapter, in Chinese planning, the credit plan is kept separate from the investment plan. Nevertheless, in the First Five Year Plan, 1520 million yuans was shown as agricultural loan and added to the other items to make up the total of 8400 million yuans as State investment in agriculture. We were told that in 1956 the target for agricultural loan was as much as 3,200 million yuans (Rs. 640 crores) of which as much as 2,800 million yuans (or Rs. 560 crores) had been already advanced by August, 1956. Further details regarding agricultural loans have been given in Chapter VIII. It has been mentioned in the First Five Year Plan of China that in addition to the State investment, the cooperative societies and the peasants themselves will invest about 10,000 million yuans or Rs. 2,000 crores during this five-year period. In addition, it is expected that the development of agricultural credit cooperatives will make it pos-

sible to draw a large amount of idle capital into agricultural production. No exact figure is available, but it will not be surprising if the total investment in agriculture, including State as well as private or cooperative investment, is somewhere between 2 and 3 times the investment made by the State alone in China. Agricultural credit provided by the State is made available to the farmers through the agricultural bank and cooperative societies. The rates of interest are uniform all over the country but differ for different purposes. The procedure for granting loans is very simple and prompt. The time taken is rarely more than 2 or 3 days.

5.28. In spite of all these measures and the very large amounts of investment provided, the Chinese planners recognize that their target of production so far as agriculture is concerned cannot be a firm one in view of the very uncertain nature of agriculture itself. Every year, there is bound to be some flood or some drought in some part or other of China. Therefore, in the targets of their annual plan they provide a measure of deviation of ($\pm$) 10 per cent and for the five year plan they assume that at least 1 or 2 years will be years of very poor seasonal conditions.

5.29. As has been mentioned above, the national plan is broken down into a series of smaller plans for the lower administrative units and ultimately into plans for different agricultural cooperatives. It is, however, only the annual plan which is usually broken down to the county and cooperative farm level. The five year plan is usually broken down to the provincial level and for important crops and works and supply schemes only upto the county level.

First Five Year Plan of China

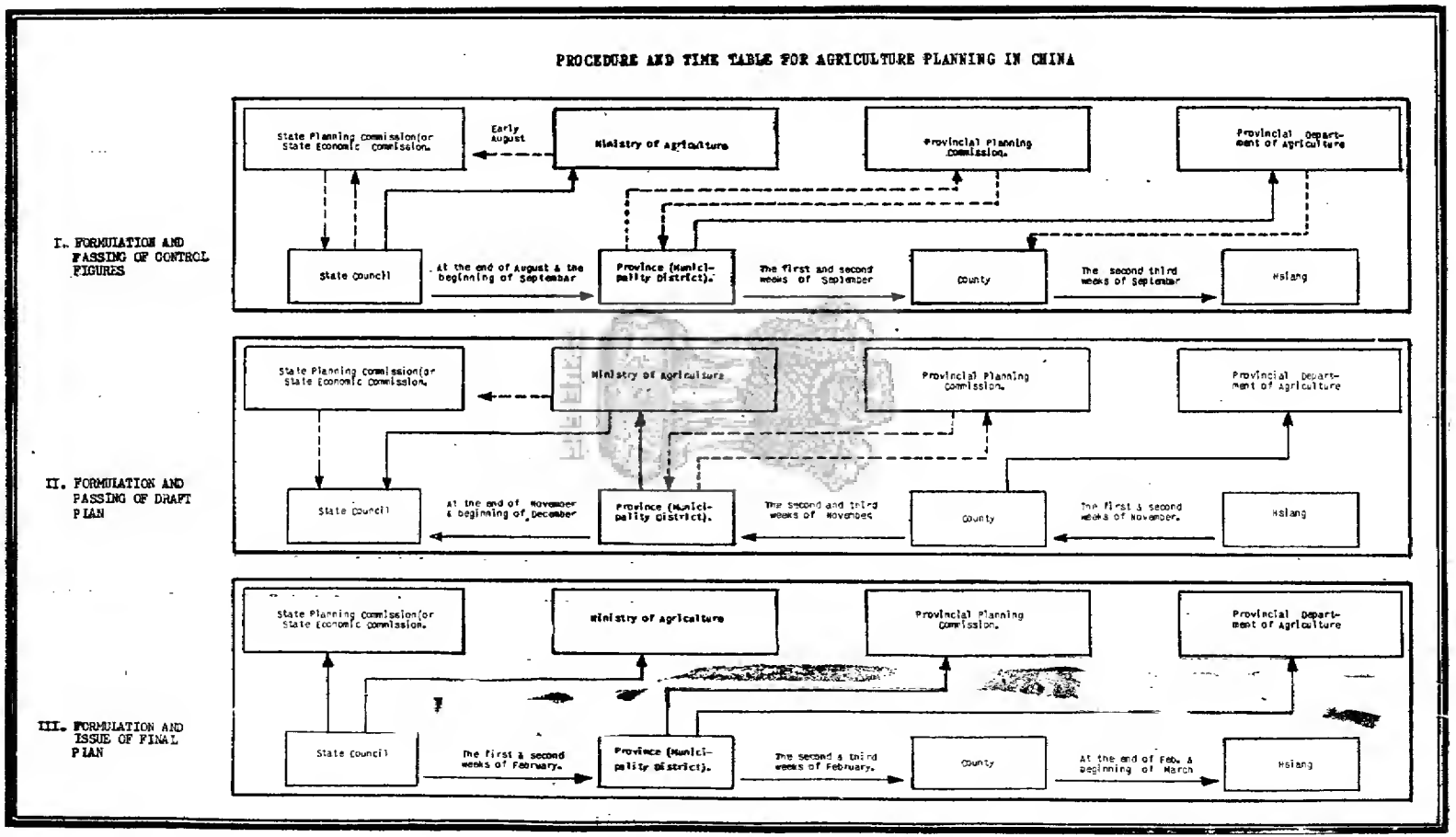
Targets of Production of Staple Farm Products

(Sown area in 1,000 mou.]
(Yield per mou in catties).
(Total output in million catties).

Products	1952			1957			Ratio of 1957 to 1952 (per cent)		
	Sown area	Yield per mou	Total output	Sown area	Yield per mou	Total output	Sown area	Yield per mou	Total output
1	2	3	4	5	6	7	8	9	10
Food Crops	1,859,683	176·3	327,830	1,914,792	201·4	385,620	103·0	114·2	117·6
Rice	425,734	321·5	136,850	444,864	367·6	163,540	104·5	114·3	119·5
Wheat	371,698	97·5	36,250	400,257	118·6	47,450	107·7	121·6	130·9
Soya Bean	175,190	108·7	19,040	190,236	118·0	22,440	108·6	108·6	117·9
Coarse grain	756,743	136·2	103,040	732,240	149·7	109,590	96·8	109·9	106·4
Potato crops	130,318	250·5	32,650	147,195	289·4	42,600	113·0	115·5	130·5
Industrial Crops	178,446			226,858			127·1		
Cotton	83,636	31·2	2,610	95,000	34·4	3,270	113·6	110·3	125·4
Jute and ambary hemp	2,372	257·6	610	2,078	351·8	730	87·6	136·6	119·7
Cured Tobacco	2,791	158·8	440	4,185	187·0	780	150·0	117·8	176·6
Sugarcane	2,737	5,200·4	14,230	4,054	6,499·7	26,350	148·1	125·0	185·1
Sugar-beet	526	1,819·1	960	2,130	2,005·9	4,270	404·9	110·3	446·4
Oil-bearing crops	85,710			118,077			137·8		
Other Products	80,708			132,121			163·7	163·7	

One mou = One fifteenth of a hectare o

PROCEDURE AND TIME TABLE FOR AGRICULTURE PLANNING IN CHINA



CHAPTER VI

STATISTICAL ASSESSMENT AND CONTROL

Pre-1952 data not reliable.

6.1. Until the present Chinese Government decided to have a planned economy, bulk of the Chinese agricultural statistics was more of a nature of intelligent guesses (or "controlled estimate" as some authors have euphemistically put it) by local officials rather than the result of any reliable and objective surveys. In fact the Chinese method of estimation was much more unreliable than even the eye estimation method which used to be followed in our *patwari* areas before the War and was perhaps comparable to the *chawkidari* estimates in our permanently settled areas in the old days. When, however, the present regime in China decided to have a planned economy, they felt that accurate, timely and detailed statistics were an indispensable requisite for planning. They, therefore, set out in right earnest to improve the statistical system of the country. In this matter, as in many other relating to planning, they were guided largely by the experience of Soviet Russia. But they also made a number of modifications with a view to adapting the system to Chinese conditions.

State Statistical Bureau set up in 1952.

6.2. The State Statistical Bureau was set up in China in 1952 with a view to collecting all the statistics that were deemed to be necessary for successful planning and administration. The State Statistical Bureau of China is more or less comparable to the Central Statistical Organisation of Soviet Russia. As in Soviet Russia, there is a deliberate duplication of the statistical work in China too. The State Statistical Bureau has its counterparts at the provincial (or Centrally administered cities or autonomous regions), county (or provincially administered cities) and hsiang levels. These are under direct technical supervision of the next higher statistical authority and ultimately of the State Statistical Bureau at the Centre but are under the administrative control of the provincial or county People's Council, as the case may be. Similarly, each Ministry of the Central Government and its counterparts at the provincial and county levels have their own statistical units which are under the administrative control of the Ministry or Department concerned. They receive, however, technical guidance directly from the Departmental Statistical Organisation at the immediate higher level and ultimately from the State Statistical Bureau at the centre through the Statistical Unit of the Ministry concerned. Statistics collected by the primary collecting agency are sent up through two

channels, one through the counterparts of the State Statistical Bureau at different levels and the other through the counterparts of Statistical Departments of the Ministry concerned at different levels. At each of these levels, the data collected are scrutinised independently but close liaison is intended to be maintained between the Departmental Statistical Unit and the counterpart of the State Statistical Bureau at the corresponding level.

6.3. Until last year, however, this liaison does not appear to have been achieved fully and in the field of agricultural statistics there was considerable discrepancy in the data collected by the Agriculture Department, Food Department, Supply and Marketing Cooperatives and the State Statistical Bureau. For instance, in regard to food production, the data collected by the Agriculture Department usually showed much higher production than the data collected by the Food Department for the purpose of food administration. From this year, therefore, a special committee has been set up at the Provincial and county levels for the coordination of all agricultural statistics. This coordinating committee comprises representatives of the local Statistical Bureau, Agriculture Department, Food Department, Supply and Marketing Cooperative and the Planning Commission. While the main responsibility for collecting agricultural data still rests with the Statistical Bureau and the Agriculture Department, all data collected at the county level are now coordinated and re-conciled, if necessary, by the coordinating committee at the county level and only agreed data are sent up to the provincial level and the same procedure is repeated there before the data are sent up to the State authorities. Since these committees have started functioning only very recently, the results cannot be assessed yet, but there is no doubt that this should avoid conflicting figures being collected and used by different Ministries for different purposes.

6.4. The State Statistical Bureau at the Centre is an independent organisation directly under the State Council. Although it is not subordinate to the Planning Commission, it is under the same Vice Premier who is in charge of the Planning Commission work also. It is through this device that the independence of the two organisations is maintained and at the same time the maximum liaison between the two ensured.

6.5. The State Statistical Bureau has one Director, five Vice Directors and four Secretaries. The Director and 3 of the Vice Directors are economists and the other 2 Vice Directors, statisticians. The Bureau comprises 14 departments with a total staff of 675 of whom 611 are technical and 64 are non-technical. These Departments are: (1) Research, (2) General Office, (3) Comprehensive Statistics, (4) Industrial Statistics, (5) Agricultural Statistics.

(6) Statistics of Capital Construction, (7) Trade Statistics, (8) Statistics of Distribution of materials, (9) Statistics of Communication and Transportation, (10) Statistics of Labour and Wages, (11) Statistics relating to Culture and Education, (12) Statistics relating to Health, (13) Editing and Translating, and (14) Machine Calculation.

Provincial Statistical Bureau.

6.6. As has been mentioned above, each Province (or centrally administered city or autonomous region) has a Statistical Bureau of its own. A typical Provincial Statistical Bureau *viz.*, that of Shantung Province has a staff of one Director, one Vice Director and 80 Technical personnel working in 7 Departments; *viz.*, (1) General Office, (2) Comprehensive Statistics, (3) Agricultural Statistics, (4) Industrial Statistics, (5) Statistics of Capital Construction, (6) Statistics of Trade and Communications, and (7) Statistics relating to Social, Cultural and Educational Activities.

6.7. The next level *viz.*, the county (or the provincially administered city) also has a Statistical set-up of its own. But at this level, the Statistical set-up is not an independent office but a part of a joint Planning and Statistics section. The statistical staff working in the Planning and Statistics Section of a typical county *viz.*, Yinshan County of the Hopei Province contains 8 technical officers *viz.*, 1 section chief, 3 agricultural statisticians, 2 industrial statisticians and 2 commercial statisticians.

6.8. At the hsiang level, there is no special Statistical Section. In each hsiang there is a small statistical group comprised of part-time workers who carry on their duties regarding collection of statistics in addition to their normal vocation.

6.9. Senior statisticians, at the Centre and at the Provinces have usually 4 year's training at a university. Other statisticians working at the provincial level are usually given one year's training organised by the State Statistical Bureau. Statisticians working at the county level are given 3 to 4 month's training organised by the Provincial Statistical Bureau. Periodical lectures are given to train the statistical workers at the hsiang level.

Statistical Section of Ministry of Agriculture.

6.10. The Statistical Section of the Central Ministry of Agriculture is a part of its Planning Bureau. As has been explained in Chapter IV, the Planning Bureau of the Ministry of Agriculture has a total technical staff of 76 of whom 15 work in the Statistical Section. Similarly, the Provincial Agriculture Department and the County Agriculture Department also have their Plannnig Bureaus or Section each of which has a Statistical Unit of its own. For instance, the Planning Bureau of the Agriculture Department of the Chekiang Province has a technical staff

of 28 of whom 10 are engaged on statistical work. Similarly, the Agriculture Departments at the county level have also their small statistical units.

Division of work.

6.11. The main division of work between the State Statistical Bureau and its counterparts at the provincial and county levels and the Statistics Department of the Ministry of Agriculture and its counterparts at the province and county levels is as follows:—

(1) The State Statistical Bureau is responsible for the working out of a coordinated system and standardised method for the country as a whole for the collection of agricultural data and for the scrutiny and standardisation of various proformas for the collection of agricultural statistics.

(2) Providing necessary technical advice to the various organisations responsible for statistical surveys and investigation in the field of agriculture.

(3) Providing the Communist Party and the important organisations of the Government with all statistical data necessary for the formulation of the agricultural plan.

(4) Checking up the implementation of the agricultural plan and organizing such statistical investigations as may be necessary for a solution of certain important problems relating to the development of agriculture.

6.12. The main functions of the Statistical Department of the Ministry of Agriculture are:—

(1) to carry out the various instructions relating to the collection of agricultural statistics issued by the State Statistical Bureau;

(2) to carry out all statistical work which is of immediate concern to the Ministry of Agriculture itself *e.g.*, the statistics of the working of the state-owned agricultural enterprises, progress of the plan for agricultural production, distribution of improved seeds, prevention of pests and diseases, etc.;

(3) to submit to the State Statistical Bureau various data on agricultural investigations and surveys that it may be required to carry out according to the procedure prescribed by the latter; and

(4) to supply the Ministry and other important organisations of the Government with all necessary statistics relating to the implementation of important agricultural policies and programmes and also to carry out such analysis and study of these data as may be required from time to time.

6.13. The system of collection of agricultural statistics in China is complete enumeration rather than sample survey. As has already been explained, before liberation

China's agricultural statistics were notoriously unsatisfactory. In most of the areas there was no village map and even where there were village maps, these were not accurate and in any case were not used for the estimation of crop area as is done in the temporarily settled areas of India. No crop cutting sample surveys were ever undertaken to estimate either the seasonal yield or even the normal yield.

Poor area and yield statistics.

6.14. After liberation, however, certain steps were taken especially in connection with land reforms which led to a considerable improvement in the quality of agricultural statistics in China. In the first place, for the purpose of distributing the land expropriated from the landlords to small peasants and landless workers, a survey of holdings was carried out in 1952. This survey was, however, undertaken not by any central authority but by the village committees themselves with the help of some members of the local Communist Party or some officials of the County. Although no trained surveyors were used, the Chinese authorities told us that since the estimates were arrived at after discussion with the village community, the figures were reasonably accurate. This was followed in 1953 by an assessment of normal yield for the purpose of determining the agricultural tax. Here again, decisions were arrived at by public discussion between the members of the village community on the one side and the officers of the county and the members of the local Communist Party on the other. The Chinese authorities with whom we discussed the subject were of the view that these estimates of normal yield were also reasonably accurate since most of the participants in these discussions were local people who were thoroughly familiar with local conditions. The organisation of cooperative farms had also, in their view, helped considerably in the collection of reliable data regarding area and yield of crops. Each cooperative farm has now to maintain detailed accounts and in the executive committee of each farm, there is a member whose special responsibility it is to check these accounts and supply relevant statistics to the statistical office at the county level. So far as the individual peasants or members of mutual aid teams are concerned, such accounts are not, of course, available. In their case, a trust-worthy member of the village is usually entrusted with the collection of relevant area and yield statistics. This person, however, does not undertake any field inspection as is done by the *patwari* in India. Because he lives in the village, many facts are supposed to come automatically to his knowledge and, if necessary, he also questions a few of the peasants concerned. And it is on the basis of this general observation that he supplies estimates of area and yield to the county statistical authority. There is thus no regular system of village

Measures for improving accuracy.

maps and records or regular crop inspection, not to speak of crop cutting sample surveys, as is the practice in India.

6.15. It must be said, however, that the quality of Chinese agricultural statistics today is much better than what it was before 1953 and is improving every year. After 1952, the measures enumerated above have definitely led to an improvement both in the coverage and quality of data. Moreover, the Chinese authorities from the top to the lowest level are now very conscious of the great importance of accurate data for the purpose of planning. Therefore, every attempt is being made to improve the quality of the data.

Comparability over time.

6.16. By and large, it appears to us that Chinese data after 1952 are not strictly comparable with earlier data. As such, a part of the improvement that is revealed by figures of area and yield of agricultural crops in China after 1952 over those of earlier years may be considered to be statistical. On the other hand, too much importance should not be given to this point. Inspite of the fact that these data are not strictly comparable, there is little doubt that the bulk of the increase in acreage and output is due to the various measures undertaken by the Chinese Government and the people and is not all mere statistical increase. This is particularly proved by the figures of 1953, 1954 and 1955 which should be treated as fairly comparable, although even here the possibility of some statistical increase may not be completely ruled out.

6.17. The reason for statistical increase of this latter type is, however, not so much increase in coverage or improvement in the quality of reporting as the subjective nature of the reports. In large parts of India, careful cadastral surveys have been undertaken, accurate village maps prepared and records maintained. And it is on the basis of these maps and records that the estimates of area under different crops are made. This reduces the possibility of error in the estimation of area to the minimum as it is not subject to mere eye estimation by the primary collecting agency. Our experience in such parts of India where accurate village maps and records are not available is that any eye estimation of the acreage is liable to very serious errors. In China, although some village maps were prepared during the land reforms, these were very rough sketch maps only and were not used for statistical purposes. Hence, it seems unlikely that the Chinese estimates of area will not be subject to similar errors. Similarly, in India crop cutting sample surveys, wherever undertaken, give very accurate estimates of yield. It has been our experience that eye estimation of yields usually tends to be very largely influenced by psychological factors. Since in China, the objective method of crop cutting sample surveys is not followed for estimating the yield of agricultural crops, especially of

food crops, and since during the last few years there has been a vigorous campaign at all levels for increasing the yield and a spirit of competition is being fostered between different villages and different farmers, it may not be unreasonable to presume that the tendency towards psychological bias which we have observed in India should also manifest itself in China to some extent. When the peasants and members of the cooperative farms, local agricultural officials as also local party members are told that yield of crops must be increased from year to year and that their work will be judged by their record in this regard and when there is a natural enthusiasm in the whole country side for increasing yields and also out doing others, it will be only human if instead of under-stating the yield they tend to over-state it. We believe that this is not done consciously. Nevertheless, we cannot but take note of the fact that in a certain psychological atmosphere, people may be quite unconsciously subject to this type of bias. Of course, ordinarily, the fact that there is agricultural tax in kind in the country should tend to counteract this bias but since that tax is assessed on the basis of 1952 production only and is not revised from year to year, the bias towards under-statement on this account may not be such as to correct the other bias towards over-statement. Inspite of this possible shortcoming of Chinese statistics, there can be no doubt that the state of affairs revealed by them is, by and large, correct. It is a fact that in many areas of China, especially in the Southern and coastal regions, where very intensive cultivation is followed, yields are very high. In fact, throughout the centuries, pressure of population on land has been much higher in these parts of China than in India. Chinese cultivators have been generally much more hard-working and efficient than many of their Indian confreres. In fact, Chinese cultivation in some of the densely populated areas has been normally more like gardening than agriculture. It is not therefore, any surprise that the average yield in China as revealed by these statistics should be much higher than the average yield in India. It was so even before Liberation. For instance, Prof. John Lossing Buck found as a result of sample surveys carried out in 1922-25, that the average yield per acre of paddy in China was then more than double of that in India. The important point, however, is not so much to assess how far the present Chinese average yield per acre is higher than the present average yield in India. But the important point to find out is how far the yield per acre is improving year by year as a result of various measures undertaken in India and in China. Here, unfortunately, the statistics are not strictly comparable because while in India the figures of yield of foodgrains are at present largely based on crop cutting sample surveys subject to no psychological bias, in China they are determined by subjective valuation which must be quite appreciably influenced by the psycho-

logical climate prevailing there. For obvious reasons, it was not possible for us to collect, on our own such figures as would enable us to make an independent estimate of overall production in China. We have, therefore, accepted the figures that have been supplied to us by the Chinese authorities. We collected, however, yield figures from the different collective farms that we visited and also roughly checked the figures supplied to us by the Central authorities at the provincial, county, hsiang and cooperative farm levels. We did not find any serious inconsistency. We found, however, that the yield figures supplied by the farmers being based on net harvested area were somewhat higher than the figures supplied by the Central authorities which were based on net sown area. As we have mentioned earlier, we do not think that there is any conscious bias in the figures supplied to us by the Chinese authorities. They have given us whatever figures they themselves have got. They are themselves very much concerned about collecting as accurate figures as possible and are thinking of instituting more objective methods of estimation. In fact, they told us that in some areas they have collected data about yield per acre from three typical hsiangs one good, one average and one bad—from each county through direct investigation by a staff which is different from that responsible for collecting routine statistics. They are now using these data to check up the figures supplied by the hsiang and county authorities. But since these figures have not been collected on the basis of a random sample crop cutting survey, it is not possible to use them either as base for any firm estimation or even for deriving any correction factor for the routine data. Nevertheless, we feel that the data officially supplied to us by the Chinese authorities even with the possible bias mentioned above should be considered as accurate as the data of any other country where crop cutting experiments are not conducted on a random sampling basis for the purpose of estimation of yield and where acreage figures are not based on cadastral survey maps and village records. If there is any over-statement, it must be at the primary level itself and not at any other level. It should also be pointed out that the yield figures are not inconsistent with pre-war data either.

6.18. A statement giving statistics of area, production and per acre yield of important crops for the years 1949 to 1955 supplied to us by the Chinese authorities is appended to this Chapter. Similar figures for India are also appended for the purpose of comparison. It will be noticed from this statement that there has been an all-round and steady increase both in acreage and in production in China since 1949 and the increase has been particularly marked since 1953. The total cultivated area in China has gone up by 12.4 per cent, from 242 million acres in 1949 to 272 million acres in 1955. During the same

period, the cultivated area in India has gone up by 11·3 per cent from 283 million acres to 315 million acres. The irrigated area in China has gone up by 29 per cent. from 50 million acres in 1949 to 64·5 million acres in 1955. During the same period the net irrigated area in India has gone up by 9·2 per cent. from 49·8 million acres to 54·4 million acres. There has been much greater progress in the direction of multiple cropping in China than in India. In China, gross sown area in 1952 was 349 million acres or 130·7 per cent. of the cultivated area of 267 million acres. As against this, in India, the gross sown area was 310 million acres, *i.e.*, 101·6 per cent. of the cultivated area of 305 million acres. In 1955, gross sown area in China was 373 million acres or 134 per cent. of the cultivated area while in India it was 326 million acres or 103 per cent. of the cultivated area. The total production of food crops in China has increased from 196 million tons in 1949 to 154 million tons in 1953 and 172 million tons in 1955, of paddy from 48 million tons in 1949 to 70 million tons in 1953 and 77 million tons in 1955, of wheat from 13·6 million tons in 1949 to 18 million tons in 1953 and 22·6 million tons in 1955 and of cotton from 437,000 tons in 1949 to 1,156,000 tons in 1953 and 1,494,000 tons in 1955. The yield of all paddy (ordinary and glutinous taken together) has increased from 1689 lbs. per acre in 1949 to 2,245 lbs. per acre in 1953 and 2,387 lbs. per acre in 1955. This may be compared with the yield of 1100 lbs. per acre for paddy achieved in India in the year 1954-55. Similarly, the yield of wheat in China has increased from 573 lbs. per acre in 1949 to 637 lbs. per acre in 1953 and 766 lbs. per acre in 1955. As compared to this, the yield of wheat in India in 1954-55 was 713 lbs. per acre. The yield of ginned cotton in China has increased from 145 lbs. per acre in 1949 to 202 lbs. per acre in 1953 and 235 lbs. per acre in 1955. By comparison the yield per acre of cotton in India was 89 lbs. in 1954-55. It may be mentioned here, however that spectacular as this progress is, the average yield in China is still somewhat lower than the figures for more normal pre-war years. According to the sample survey conducted by John Lossing Buck in 1922-25 the average yield per acre of ordinary paddy was 3,425 lbs. per acre, of glutinous paddy 5,423 lbs. per acre, of wheat 863 lbs. per acre and of cotton 162 lbs. per acre. As a result of Japanese invasion and civil war, average yield per acre had fallen to abnormally low levels by 1949. As soon as peace was established, the Chinese farmer was able to restore the yield to the original levels without much difficulty. It is, however, yet to be seen whether he will be able to go in future much beyond the very high level which he had reached in normal times before the War. It is one thing to make up lost ground and quite another to break new ground. Our general impression of the crops that we saw during our tour in August, 1956, is that the Chinese farmer has made very good recovery and that this recovery

is not confined to particular areas or particular groups of farmers but is almost universal. It is this latter point which is of particular significance for us. The crops in the best areas or in best farms in India are no worse than those in the best areas and in best farms in China. For instance, in the State of Mysore, the average yield of paddy is about 2,000 lbs. for the rainy season cultivation as against the all-India average of about 1,100 lbs. But in the Malahalli National Extension Block of that State the average yield of paddy in irrigated area under improved seeds was 2,500 lbs. in 1952-53 and has gone up to 4,500 lbs. in 1953-54 and 5,500 lbs. in 1954-55 as a result of extension work. In Ramnagar National Extension Block of the same State, the normal yield is 3,000 to 3,200 lbs. per acre but the Japanese method is yielding as much as 6,000 lbs. per acre. This shows that in India, the proportion of indifferent and poor farmers is much greater than in China and that is the main reason why although our best yields do not compare unfavourably with those in China, our average yield is very much lower. The main problem before our country is, therefore, that of raising the level of the average farmers to that of the best farmers.

Progress Reports and Statistical Control.

6.19. In China, there is an elaborate arrangement for getting progress reports from the various basic units and for exercising statistical control on their work. The progress reports are of two types—(1) Administrative, and (2) Statistical. Administrative reports are obtained on a routine basis once every quarter. In addition, special *ad hoc* reports are also called for whenever the situation so demands. For these reports, special proforma have been laid down. The Directors of the Provincial Agriculture Departments as well as the Heads of the Provincial Planning Departments come every June and December to the Central Ministry of Agriculture and Central Planning Commission respectively for making personal reports. Officers from the Central Ministry of Agriculture also go out regularly for making spot inspections.

6.20. As regards the statistical reports, the Statistical Offices at the county and provincial levels submit regular reports in prescribed proformas regarding (a) implementation of the target for sowing, (b) implementation of the target for farm work, including plans for works, supplies and credit, and (c) harvests.

6.21. For the accuracy of the statistics and of the progress reports, main reliance is put on the Executive Committees in the basic units like cooperative farms or hsiangs which examine and discuss the statistics and reports before they are passed on to higher authorities. It is presumed that as a result of these public discussions, any errors, deliberate or otherwise, will be detected and corrected. Besides, occasional spot inspections are made by

officers both of the Statistical Department and the Agriculture Department in one good hsiang, one average hsiang and one bad hsiang in a number of selected counties. But this inspection is done more with a view to ascertaining the nature of the problems and difficulties and finding out solutions for them rather than for making statistical estimates.

6.22. Another indirect check is also provided by the system of grain deliveries. On the basis of public discussion in various cooperative farms and hsiangs, an estimate is made of the quantity of grain that should be delivered by the farmers to the State. Normally, this should provide a useful check on the production statistics both in cooperative farms and in peasant holdings. We are not, however, quite sure how far it is so in practice in view of the fact that the grain deliveries are now essentially voluntary.

6.23. Both these methods are, however, of a diagnostic character rather than estimating. They seem to be alright for finding out in a general way what the difficulties standing in the way of the implementation of the plan are. Since, however, they are not based on a properly designed sample, they are not of much value for giving any quantitative idea of the success or otherwise of a particular scheme. In this respect, they certainly fall short of the assessment surveys on a random sample basis that have been evolved in India.

Cultivated Area and Irrigated Area in China

[In 10,000 mou.]

	1949	1950	1951	1952	1953	1954	1955
Cultivated area	146,822·1	150,533·8	155,506·8	161,877·9	162,792·8	164,0 ,1·9	165.234·7
Irrigated area accumulated	30,391·0	31,168·0	32,638·0	35,051·0	36,041·0	37,215·0	39,155·0

NOTE.—Irrigated area (including those improved areas)* expanded between January—June 1956 (incomplete) can reach above 100 mou more.

*Total land area 1,439,550 (in 10,000 mou)

Of which land that can be reclaimed 150,000 (in 10,000 mou)

Forest area more than 114,000 (in 10,000 mou)

Total population 60,193·8 (10,000) (Census data of June 30th, 1953).

I. (a) *Cultivated Area and Irrigated Area in China*

[In thousand acres]

	1949	1950	1951	1952	1953	1954	1955
Cultivated area	241,816·0	247,929·2	256,119·7	266,612.9	268,119·7	270,160·5	272,141·5
Irrigated area accumulated	50,053·9	51,333·7	53,754·8	57,729·0	59,359·5	61,293·1	64,488·3

I. (*b*) *Cultivated Area and Irrigated Area in India*

[In thousand acres]

	1949-50	1950-51	1951-52	1952-53	1953-54 @	1954-55	1955-56
Cultivated area (net area sown)	283,221	293,42	283,044	304,669	313,059	314,901	Not available.
Irrigated area accumulated							
Net area irrigated	49,797	51,529	52,013	52,407	53,694	54,395	
Gross area irrigated	53,717	55,755	57,278	57,694	59,835	60,727	

@ Provisional and subject to revision.

II. *Sown area of Major Agricultural Crops in China*

[In 10,000 mou.]

	1949	1950	1951	1952	1953	1954	1955
Total sown area	..	..	..	**211,883·7**	**216,053·1**	**211,888·3**	**226,262·4**
Food crops	152,459·7	157,205·4	160,451·7	168,449·1	171,411·9	174,511·8	177,596·1
Paddy rice	38,562·8	39,223·9	40,399·9	42,573·4	42,481·7	43,082·7	43,760·1
Wheat	32,273·4	34,200·0	34,582·3	37,169·7	38,453·9	40,451·4	40,108.5
Potato crops	10,515·9	11,544·2	12,428·4	13,031·6	13,523·7	14,671·4	15,080·8
Miscellaneous crops	71,107·6	72,237·3	73,041·1	75,674·4	76,952·6	76,306·3	78,646·7
Soya beans	12,478·2	14,403·2	16,201·0	17,519·1	18,543·0	18,980·6	17,162·6
Cotton	4,155·0	5,678·9	8,226·9	8,363·6	7,770·0	8,193·0	8,659·1
Jute and ambary hemp	12·5	72·7	266·1	237·2	118.8	108·0	174·3
Cured tobacco	91·3	91·8	357·5	279·0	286·6	326·9	378·0
Sugar cane	162·3	168·6	212·2	273·7	288·5	328·1	306·3
Sugar beet	23·9	31·3	35·2	52·6	73·0	109·5	172·3
Peanut	1,881·6	2,015·7	2,499·8	2,706·4	2,662·8	3,144·9	3,402·5
Rapeseed	2,272·5	2,134·6	2,350·6	2,794·7	2,500·7	3,559·6	3,507·0
Other crops	..	..	..	7,174·2	8,610·1	9,762·6	10,884·6

II. (a) *Sown Area of Major Agricultural Crops in China*

[In thousand acres]

	1949	1950	1951	1952	1953	1954	1955	1957 (Targets)
Total sown area	..	..	..	**348,972·4**	**355,839·4**	**365,450·0**	**373,247·1**	
Food crops	251,101·1	258,917·3	264,263·9	277,435·7	282,315·4	287,420·9	292,500·8	284,034·4
Paddy	63,512·9	64,601·7	66,538·6	70,118·4	69,967·4	70,957·2	72,072·8	73,269·1
Wheat	55,154·3	56,327·4	56,957·0	61,218·5	63,333·6	66,623·4	66,058·7	65,922·3
Potato	17,319·7	19,013·3	20,469·6	21,463·0	22,273·5	24,163·8	24,838·1	24,243·0
Miscellaneous food crops	117,114·2	118,974·8	120,298·7	124,635·7	126,740·9	125,676·5	129,531·1	120,600·0*
Soya Beans	20,551·6	23,722·1	26,683·0	28,853·9	30,540·3	31,261·0	28,266.8	31,331·8
Cotton	6,843·3	9,353·1	13,549·7	13,774·0	12,797·2	13,493·8	14,261·5	15,646·5
Jute and ambary hemp	20·6	119·7	438·5	390·7	195·6	177·8	287·1	342·2
Cured Tobacco	150·4	151·2	588·8	459·5	472·0	538·4	622·6	689·3
Sugar cane	267·3	277·7	349·5	450·8	475·2	540·4	504·5	667·7
Sugar beet	39·4	51·5	58·0	86·6	120·2	180·3	283·8	350·8
Peanut	3,099·0	3,319·8	4,117·2	4,457·4	4,385·6	5,179·6	5,603·9	19,447·3@
Rapeseed	3,742·8	3,515·7	3,871·4	4,602·7	4,118·6	4,215·6	5,776·0	
Other crops	..	..	..	11,815·9	14,180·8	16,079·0	17,926·9	21,760·3

*Relates primarily to coarse grains.
@Relates primarily to oil bearing crops.

II. (*b*) *Sown Area of Major Agricultural Crops in India*

[In thousand acres]

Crops	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56*
Food Crops	196,074	193,906	193,822	203,859	216,449	212,680	211,658
Paddy rice	75,414	76,135	73,713	74,036	77,318	75,949	76,253
Wheat	24,114	24,082	23,404	24,286	26,394	27,517	29,225
Potato	577	592	617	629	635	665*	658†
Miscellaneous Food Crops	95,969	93,097	96,088	104,888	112,102	108,559	105,522
Gram and Pulses	49,833	47,175	46,394	49,039	53,695	55,300	55,100
Cotton	12,173	14,536	16,201	15,713	17,265	18,684	20,230
Jute	1,161	1,411	1,951	1,813	1,228	1,243	1,581
Tobacco	860	883	713	896	912	860*	893††
Sugarcane	3,624	4,217	4,792	4,272	3,485	3,994	4,446
Sugar beet	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Peanut	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Rape and Mustard	4,781	5,118	5,934	5,201	5,345	6,025	6,262

II. (*b*) *Sown Area of Major Agricultural Crops in India*—contd.

(In thousand acres]

	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56*
Tea	772	777	782	778	776	777	N.A.
Other Crops (A)	21,626(a)	23,092(a)	24,572(a)	24,384	23,672	27,091	25,570
Other Crops (B)	4,094	4,200	4,109	4,154	4,238	4,217**	N.A.
Total Sown area	294,998	295,315	299,270	310,109	327,265	330,881	325,740@

* Relates to Final Estimate.
†† Relates to Third Estimate.
† Relates to Second Estimate.
(*a*) Excluding mesta crop.
(A) Crops covered are ginger, pepper, chillies, all oilseeds excluding rape and mustard and mesta.
(B) Crops covered are bananas, papaya, sweet potatoes, tapioca, termeric, sann-hemp, indigo, opium, lac, coffee, rubber and copra.
** Estimated and subject to revision.
N.A.—Not available.
@ Incomplete due to want of data for certain crops.

III. *Total production of major Agricultural Crops in China*

[Food Crops and Soya Bean in 100 Million Catties]

[Technical Crops and Tea in 10,000 Tan (Piculs)]

	1949	1950	1951	1952	1953	1954	1955
Food Crops	2,161·9	2,493·8	2,701·1	3,087·9	3,138·0	3,208·7	3,496·2
Paddy Rice	972·9	1,102·0	1,211·1	1,368·5	1,425·4	1,417·0	1,560·5
Wheat	276·2	289·9	344·6	362·5	365·6	466·7	459·3
Potato crops	196·8	247·8	280·0	326·5	333·1	339·6	377·9
Miscellaneous crops	716·0	854·1	865·4	1,030·4	1,013·9	385·4	1,098·5
Soya bean	101·7	148·7	172·6	190·4	198·6	181·6	182·4
Technical Crops—							
Cotton	888·8	1,384·9	2,061·1	2,607·4	2,349·5	2,129·8	3,036·9
Jute and ambary hemp	73·7	157·6	499·4	611·0	275·8	273·3	513·6
Cured tobacco	85·8	113·0	484·3	443·2	425·5	463·9	595·7
Sugar cane	5,284·3	6,266·8	9,257·7	14,231·6	14,418·0	17,184·7	16,220·1
Sugar beet	381·0	489·8	720·0	957·1	1,010·3	1,978·0	3,192·2
Peanuts	2,536·4	3,478·6	4,191·3	4,631·5	4,254·4	5,534·1	5,851·9
Rapeseed	1,468·1	1365·4	1,555·6	1,864·1	1,757·3	1,756·0	1,938·8
Tea	82·1	130·4	157·4	164·8	169·4	184·2	215·9

NOTE.—1936, Total production of food crops : 2,774·0 (100 mix catties), Breakdown Paddy Rice 1,146·8, wheat 465·9, Potato crops 126·7, Miscellaneous crops 1,034·6.

1936, Technical crops : Cotton 1,697·6 (10,000 piculs), jute and ambary hemp 217·4, cured tobacco 357·2.

III. (a) *Total Production of Major Agricultural Crops in China*

[In thousand long tons.]

Crops	1949	1950	1951	1952	1953	1954	1955	1957 (Targets)
Food crops	106,387·1	122,719·9	132,921·1	151,955·5	154,421·0	157,900·1	172,048·0	178,720·8
Paddy	47,876·4	54,229·4	59,598·2	67,343·9	70,143·9	69,730·6	76,792·2	80,478·0
Wheat	13,591·8	14,265·9	16,957·8	17,838·6	17,991·2	22,966·3	22,602·1	23,350·1
Potato	9,684·5	12,194·2	13,778·8	16,067·0	16,391·8	16,711·7	18,596·5	20,963·5
Miscellaneous Food crops	35,234·4	42,030·3	42,586·3	50,705·9	49,894·0	48,491·5	54,057·2	53,929·2*
Soya Beans	5,004·6	7,317·5	8,493·6	9,369·6	9,773·1	8,936·5	8,975·9	11,042·7
Cotton	457·4	681·5	1,014·3	1,283·1	1,156·2	1,048·1	1,494·4	1,609·2
Jute and ambary hemp	36·3	77·6	245·7	300·7	135·7	134·5	252·7	359·2
Cured Tobacco	42·2	55·6	238·3	218·1	209·4	228·3	293·1	383·8
Sugarcane	2,600·4	3,083·9	4,555·7	7,003·4	7,095·1	8,456·6	7,981·9	12,966·8
Sugar beet	187·5	241·0	354·3	470·9	497·2	973·4	1,570·9	210·3
Peanuts	1,248·2	1,711·8	2,062·5	2,279·2	2,093·6	2,723·3	2,879·7	..
Rapeseed	722·5	671·9	765·5	917·3	864·8	864·1	954·1	..
Tea	40·4	64·2	77·5	81·1	83·4	90·6	106·2	..

*Relates primarily to coarse grains.

III. (b) *Total Production of Major Agricultural Crops in India*

[In thousand long tons]

Crops	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56
Food Crops	59,122	53,504	55,055	62,452	74,078	69,762	67,729
Paddy	34,755	30,377	31,446	33,806	41,654	36,797	38,211
Wheat	6,290	6,360	6,085	7,382	7,890	8,778	8,348
Potatto	1,519	1,634	1,685	1,961	1,925	1,762*	1,643†
Miscellaneous crops	16,558	15,133	15,839	19,303	22,609	22,425	19,527
Gram & Pulses	8,030	8,278	8,287	9,044	10,450	10,870	10,187
Cotton	460	509	548	559	690	740	700
Jute	552	586	835	820	552	523	739
Tobacco	264	257	206	241	268	248*	249‡
Sugarcane @	4,938	5,615	6,066	5,019	4,423	5,760	5,859
Peanut	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Sugar beet	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Rape & Mustard	793	750	925	844	858	1,019	832
Tea	261	271	286	301	263	289	N.A.
Other Crops (A)	4,683(a)	4,707(a)	4,401(a)	4,256	4,882	5,708	5,360
Other Crops (B)	5,089	5,128	5,433	5,403	6,100	6,124**	N.A.

N.A. Not available.
* Relates to Final Estimate.
** Estimated and Subject to revision.
† Relates to Second Estimate.
‡ Relates to Third Estimate.
@ In terms of raw sugar gur.
(a) Excluding mesta crop.
(A) Crops covered are ginger, pepper, chillies, all oilseeds excluding rape, mustard and mesta.
(B) Crops covered are bananas, papaya, sweet potatoes, tapioca, turmeric, sann-hemp, indigo, opium, lac, coffee, rubber and copra.

IV. *Unit, Area, Output of Major Agricultural Crops in China*

[In catty per mou.]

	1949	1950	1951	1952	1953	1954	1955
Food crops	141·8	158·6	168·3	183·3	183·1	183·9	196·9
Paddy rice	252·3	281·0	299·8	321·5	335·5	328·9	356·6
Wheat	85·6	84·8	99·7	97·5	95·1	115·4	114·5
Potato crops	187·2	214·6	225·3	250·6	246·3	231·5	250·6
Miscellaneous crops	100·7	118·2	118·5	136·2	131·8	129·1	139·7
Soya Beans	81·5	103·3	106·5	108·7	107·1	95·7	106·3
Cotton	21·6	24·4	25·1	31·2	30·2	26·0	35·1
Jute & ambary hemp	173·1	216·7	187·7	257·6	232·1	253·2	294·6
Cured tobacco	93·9	123·0	135·5	158·8	148·4	141·9	157·6
Sugar cane	3,255·4	3,716·5	4,362·3	5,200·4	4,998·1	5,237·4	5,294·9
Sugar beet	1,593·8	1,565·5	2,046·9	1,819·4	1,383·7	1,805·8	1,852·6
Peanut	134·8	172·6	167·7	171·1	159·8	176·0	172·0
Rapeseed	64·6	64 0	66·2	66·7	70·3	68·6	55·3

IV. (a) *Yield per acre of Major Agricultural Crops in China*

[In lbs. per acre]

Crops	1949	1950	1951	1952	1953	1954	1955	1957 (Target)
Food crops	949·0	1,061·5	1,126·4	1,226·8	1,225·4	1,230·8	1,317·8	1,409·5
Paddy	1,688·6	1,880·7	2,006·5	2,151·7	2,245·4	2,201·3	2,386·6	2,460·3
Wheat	572·9	567·5	667·4	632·5	636·5	772·3	766·3	793·8
Potato	1,252·9	1,436·3	1,507·9	1,677·2	1,648·4	1,549·4	1,677·2	1,936·9
Miscellaneous crops	673·9	791·1	796·1	911·6	882·1	864·0	935·0	1,001·9*
Soya Beans	545·5	691·4	712·8	727·5	716·8	640·5	711·4	789·7
Cotton	144·6	165·5	168·0	208·8	202·1	174·0	234·0	230·2
Jute and ambary hemp	1,158·5	1,450·3	1,256·2	1,724·4	1,553·4	1,694·6	1,971·7	2,354·5
Cured Tobacco	628·4	823·2	906·9	1,062·8	993·2	949·7	1,054·8	1,251·6
Sugarcane	21,787·7	24,873·8	29,196·0	34,805·2	33,451·3	35,052·9	35,437·7	43,501·2
Sugar beet	10,667·0	10,477·6	13,699·5	12,176·9	9,280·8	12,085·8	12,399·1	13,425·1
Peanut	902·2	1,155·2	1,122·4	1,145·1	1,069·5	1,177·9	1,151·2	..
Rapeseed	432·8	428·3	443·1	446·4	470·5	459·1	370·1	..

* Relates primarily to coarse grains.

IV. (b) *Yield per acre of Major Agricultural Crops in India*

[In lbs. per acre]

Crops	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56
Food Crops	675	618	636	686	767	735	717
Paddy	1,032	894	956	1,016	1,207	1,085	1,122
Wheat	584	592	582	681	670	715	640
Potato	5,897	6,183	6,117	6,984	6,701	5,935*	5,593†
Miscellaneous food crops	386	364	369	412	452	463	415
Gram & Pulses	361	393	400	413	436	440	414
Cotton	85	78	76	80	90	89	77
Jute	1,062	931	959	1,013	1,007	942	1,047
Cured Tobacco	688	652	647	603	658	646*	625‡
Sugarcane	3,052	2,983	2,836	2,632	2,843	3,200	2,950
Sugar beet							
Peanut							
Rape seed	372	328	350	363	347	379	294
Tea	815	842	891	938	826	902	
Other Crops (A)	485	457	401	391	462	472	470
Other Crops (B)	2,784	2,735	2,962	2,914	3,224	3,252**	N.A.

*Based on Final Estimate.
†Based on Second Estimate.
‡Based on Third Estimate.
**Estimated.
N. A.—Not available.

V. (a) *Number of Livestock in China*

[In 1000 heads]

	1949	1950	1951	1952	1953	1954	1955	1956
I. Large Livestock (excluded camel).	59,775	65,185	70,143	76,173	80,455	84,980	87,388	
1. Cattle	33,752	37,188	40,619	44,960	47,923	51,176	53,481	
Adult female							18,226	
2. Water buffalo	10,184	10,915	11,469	11,640	12,160	12,447	12,470	
Adult female							4,175	
II. Sheep & goat	42,347	46,730	52,868	61,779	72,023	81,304	84,218	
III. Pig	57,752	64,006	74,401	89,765	96,131	101,718	87,920	

NOTE.— No data for adult female cattle and water buffaloes available for the years 1949-1954.

V. (b) *Number of Livestock in India*

[In thousands]

	1945	1951	1956*
I. Large Livestock† (Excluded Camel)	179,129	201,263	206,740
1. Cattle	135,960	155,099	158,863
Adult female	43,361	49,848	49,674
2. Buffaloes††	40,593	43,351	44,766
Adult female	19,928	21,842	22,299
II. Sheep and goats	84,015	85,906	95,294
III. Pigs	3,707	4,420	N.A.

*Figures are provisional and subject to revision.
†Include cattle, buffaloes, horses & ponies, mules, donkeys.
‡Relate to total buffaloes.
N.A.—Not Available.

CHAPTER VII

MEASURES FOR IMPLEMENTATION—AGRARIAN RE-ORGANIZATION

Priority for "social reforms".

7.1. For the achievement of targets laid down in the Plan, the Chinese authorities rely primarily on three sets of measures, namely, (i) agrarian re-organization or "social reforms", (ii) economic and financial measures or tax, price, planned purchase and credit policy, and (iii) technical reforms. Of these three measures, they place the greatest emphasis on the first, by which they primarily mean land reform and co-operation. Chairman Mao Tse-Tung has himself emphasized that of the main types of reforms required for the improvement of Chinese agriculture, namely, social reforms and technical reforms, social reforms should be given higher priority and should precede technical reforms. The Chinese authorities are of the view that different facets of co-operation are inter-connected and have a close bearing on agricultural development. Thus, the purchase of foodgrains and other agricultural produce by the State at prices fixed in advance determines the amount and the stability of farm income. The supply of consumer goods to rural areas influences the agricultural effort which may be forthcoming, and the agency through which consumer goods are made available also has a decisive influence on the character of the rural economic structure. Without co-operative credit societies, the provision of finance for agricultural production and for meeting consumption needs cannot be adequately organized. Even if the People's Bank or the Agricultural Bank were willing to provide the funds, no amount of rural savings can be drawn effectively into the economic system. Finally, they feel that the introduction of advanced techniques in agriculture, including improved seed, extended use of fertilizers and manures, programmes of minor irrigation and drainage and the utilization of the manpower resources of the village requires that small peasant-farms be replaced by producers' co-operatives. Each of these developments, and especially those relating to credit and farming, were made possible by the land reforms carried out in China during 1951 and 1952.

7.2. During our stay in China, we gave close attention to the role of agricultural co-operatives and the manner in which they were functioning. In this Report, we confine ourselves in the main to those aspects of agricultural co-operation which have a special bearing on agricultural development. Since a separate report, largely devoted

to this subject, will be presented by the Indian Co-operative Delegation, we think it would be useful to official as well as non-official workers in the field of co-operation if the instances of agricultural co-operatives studied by members of the Agricultural and the Co-operative Delegations are brought together as case studies in a single volume and made generally available. There are detailed aspects of the working of agricultural co-operatives which will be better understood by those engaged in developing co-operative farming in India if studies of individual co-operatives in China are put together. We append, however, to this chapter a brief account of one of the co-operative farms, the Red Day Co-operative of the Shuang Ling hsiang, that we visited in China by way of illustrating the organization of and nature of planning in a typical producers' co-operative.

7.3. It is not necessary for us in this Report to trace the various elements of thought and reasoning which lie behind the programme of agricultural co-operatives in China. Fundamental reforms are seldom undertaken unless technical, economic and ideological considerations call for them. As a result of land reform, agricultural holdings in China became extremely small. Without larger units, a continuous increase in agricultural production could not be envisaged. The conditions for a steady rise in agricultural output in the ordinary course did not exist. For this, mutual aid teams consisting of peasant-farmers and supply of credit afforded only a partial remedy. Without being brought into co-operatives, it was scarcely possible to mobilize the resources of villages for productive purposes and to introduce improved techniques of production on any large scale. As the Central Committee of the Communist Party declared in October, 1955 "actual experience has taught the peasants that they cannot go on living as they used to—farming scattered, tiny plots on their own—that the only way out is for a large number of people to come together, pool their labour and work under collective management." There was never any doubt in the mind of the Communist Party that

> "Agricultural producers' co-operatives can organize labour power rationally so that productivity can be raised more rapidly; they can systematically and effectively use land and extend the area under cultivation; they can resist or reduce the ravages of nature and, with State help gradually introduce technical reforms in agriculture. For these and other reasons, they are able to bring about a speedy development of the productive forces in agriculture and give the peasants substantial benefits."

On technical and economic considerations, therefore, the question before the Government and the Communist Party in China was not whether there should be co-operatives, but the form which agricultural co-operatives should take, the manner in which and the speed at which they should be introduced and the concessions which might be needed in order to persuade traditionally individualistic peasants to pool their lands.

7.4. In any under-developed country, the development of agriculture has to be seen, not as an independent activity, but in relation to the programme of industrialization. Here as is well-known, the Chinese have adopted a policy of rapid industrialization with special emphasis on the building up of heavy and basic industries, machine-building and defence. In such development, no small part of the burden of industrialization falls on peasants—a burden, the Chinese authorities feel, the peasants cannot discharge if they continue with their individual holdings, each ploughing his land with his limited resources and selling his small surplus. Thus, the pattern of industrialization of a country dictates to no small extent the pattern of agricultural development and the structure of the rural economy.

7.5. No less important than these technical and economic considerations was the view held by the leaders of the Communist Party that a socialist society could not be built up unless co-operative farming took the place of peasant-proprietorship and step by step all vestiges of individual ownership in land were discarded. As they put it, "the nation could not stand with one foot on socialistic industry and the other on a peasant economy." Or, in the words of Chairman Mao Tse-Tung, "if positions in the countryside are not held by socialism, capitalism will assuredly occupy them". Furthermore, apart from considerations of national defence, unless agriculture itself in due course begins to employ improved techniques, including machines, the building up of basic industries and of machine building industries creates its own difficulties. The mechanization of agriculture, over whatever period it may be achieved, requires relatively large farms so that in each country embarking upon such a course, the pooling of the bulk of peasant holdings is a path difficult to escape. It was for these various reasons that the Central Committee of the Communist Party declared a year ago that—

> "The aim of the co-operative movement is to lead about 110 million peasant households from individual to collective farming and then go on to bring about technical reform in agriculture; it is to eliminate the last vestiges of capitalist exploitation in the rural areas and establish socialism. The building up of socialism is the cause of hundreds of millions of people."

Land reforms.

7.6. This is not the place to describe in detail the principles and methods followed in carrying out the land reform programme. It is sufficient to recall that land reform in China meant an extraordinarily wide distribution of ownership in land. Altogether about 118 million acres of land were distributed among 300 million peasants, men and women, an average of one-third of an acre per head. Besides land, houses belonging to landlords containing about 38 million rooms, about 30 million draught animals, 39 million agricultural implements and about 5 million tons of foodstuffs were confiscated from landlords and redistributed. Many former landlords were allotted land on the same basis as tenants and labourers. Rich peasants cultivating their own lands were not at this stage disturbed, while a proportion of middle peasants actually obtained additional land in accordance with the scale of distribution adopted in each local area. Thus, whether it benefited, injured or left untouched, land reform in China was a gigantic event which, in a period of less than two years, transformed the entire rural structure and destroyed many old class relationships and distinctions of status and opportunity, leaving the field clear for new goals and new values. The fact that members of the Communist Party, already close to the peasantry, had led the people at every step in the process of land reform, identifying themselves with the interest of poor peasants and turning the enthusiasm and hatred aroused in the people into a social weapon, further increased, we were told, their hold over rural masses. Had the processes of land reform in China been different from those which actually occurred, had the technical and economic conditions created by land reform been different and had there been a party leadership in the country-side less identified with the cause of poor peasants, it is conceivable that the course of events in China in the field of agricultural co-operation would have been somewhat different.

7.7. As early as 1953, the Central Committee of the Communist Party of China issued a policy statement on Decisions on the Development Agricultural Producers' Co-operation. This had been preceded earlier in 1951 by a policy document on Decisions on Mutual Aid and Co-operation. The lead given in these early documents is summed up thus in a statement on behalf of the Central Committee of the Communist Party of China in 1954 which recorded the results of the agrarian reform movement:

> "To carry out co-operative farming the actual path to be followed begins with mutual-aid teams, voluntarily organized for the mutual benefit of the peasants, using collective labour, but on a basis of private ownership of property. Next comes semi-socialist agricultural producers' co-operatives, with collective labour, common use of land, and single manage-

ment. The last stage of the road is the higher form of co-operatives, the fully socialist agricultural producers' co-operative—collective farms".

Subsequent events have helped mainly to fill the details, speed up the processes, and evolve practical solutions for new and difficult problems. The basic approach, however, had been decided upon more than three years ago. Agricultural co-operation followed naturally from land reform. Arrangements for State purchase of foodgrains and other farm products and the organization of credit co-operatives closely linked with the People's Bank were important supporting developments. Together, they helped eliminate the rural trader, the urban merchant and the landlord, so that the ground was fully prepared for agricultural co-operatives.

Agricultural producers' Co operatives.

7.8. Agricultural co-operatives had relatively small beginings. In 1950, there were 19 producers' co-operatives, in 1952, 3644, in 1953, 15068 and in 1954, 114,366. During this period, the number of peasant households in agricultural co-operatives increased from 219 to about 2·3 million. The year 1955—as it happened, agriculturally an excellent year—marked the turning point. There were many in the leadership of the Communist Party itself who felt insecure at the pace at which co-operatives were being formed. At this stage, came Chairman Mao Tse-Tung's report of July 1955 on "The Question of Agricultural Co-operation" to a meeting of secretaries of provincial, municipal and autonomous regional committees of the Communist Party of China. This is undoubtedly a document of historic importance which constitutes the dividing line between the period of steady and cautious progress in co-operation to the "new upsurge in the socialist mass movement." Chairman Mao Tse-Tung sensed that the leadership was lagging behind the mass movement. "We should realise, here and now" he said, "that an upsurge in socialist transformation will soon come about all over the country's rural areas. This is inevitable." "We must be convinced first, that the peasant masses are willing, led by the Party, gradually to follow the socialist road; second, that the Party is able to guide the peasants to take this road. These two points are the essence, the crux of the matter. If we lack this conviction, it is impossible for us to virtually achieve socialism in the period of roughly three five-year plans". This call from Chairman Mao followed by the organisational drive of the Communist Party and efficient support in the execution of individual programmes by all levels of the administration, gave to millions of workers in the Communist Party a great new objective to work for. From all accounts, the progress of agricultural co-operation during the past year or more has exceeded the best anticipations of the leaders of the Government and the Party.

7.9. In 1955, the number of agricultural co-operatives rose to 633,742 of which only 529 were of the 'advanced' type. By the end of May, 1956, 10,010,000 agricultural co-operatives had been established. These included 91·2 per cent. of the 110 million rural households of China, of which 61·9 per cent. had become members of agricultural co-operatives of the 'advanced' type and 38·1 per cent. of co-operatives of the 'elementary' type. In the elementary co-operative, 'the principal means of production such as land, draught animals and farm tools owned privately by members are put under a single, centralised management and gradually turned into their common property', and 'the co-operative pays each member an appropriate sum as dividend out of its annual income, commensurate with the amount and quality of land the member pools in the co-operative.' The 'advanced' type of co-operative is 'a socialist, collective economic organisation' in which 'peasants joining the co-operative must turn over their privately-owned land and other important means of production, such as draught animals, large farm tools, etc. to the collective ownership of the co-operative'. The differences in internal management and organisation are relatively small. In both, the principle of mutual benefit is emphasised, the right to withdraw is allowed, small private plots for cultivation are given, and compensation is paid for draught animals and farm tools. Formally, the main distinction relates to the 'dividends on land shares', but there are important differences in actual operation. The elementary co-operative tends to remain relatively small, the advanced co-operative tends to become steadily larger. In the former, the fact that a return on land over and above the return for labour exists has in the opinion of the Chinese authorities the effect of limiting the extent to which manpower is utilised on works of benefit to the whole community.

7.10. In the First Five Year Plan, which was presented in June, 1955, the aim was that by 1957 about one-third of all the peasant households might join agricultural producers' co-operatives of the elementary form, the proportion in some provinces being about one-half. By the end of the Second Five Year Plan, it was hoped to organise a majority of peasant households in the elementary form of co-operatives in all the principal agricultural areas. Such has been the speed with which co-operation has gone forward that in most parts of China, the main task of establishing agricultural co-operatives of the advanced type is expected to be completed by the close of the winter of 1956. The pressure of population over much of China is great and the individual holdings left after land reform are so small that once a village moves towards the co-operative form of organisation, the elementary agricultural co-operative can only be a place of temporary halt. Increasingly, it becomes a stage to be passed by since in the conditions now prevailing in Chinese villages, we were told, the dividend for ownership can account for only a

small fraction of an individual's income, and the full benefits of co-operation are realised more fully in the advanced than in the elementary form.

7.11. It is customary in China to refer to these developments as 'the surging tide of agricultural co-operation'. Increase in the number of producer co-operatives is significant; even more so is the transformation in their character which is now proceeding with all the force of a 'huge mass movement'. In a social and economic change of this order, necessarily, there are many forces and pressures at work and important questions of organisation, political, administrative and technical, are involved. It is outside the scope of this Report to enter into a discussion of these aspects, especially as we expect that they will be dealt with fully by the Co-operative Delegation. Within each co-operative, with a view to its effective functioning, decisions have to be taken on a number of questions, as for instance, internal management, the taking over of land, draught animals and farm tools, the setting up of funds to meet production expenses, to acquire means of production, to provide relief and welfare, and for reserves, the organisation of the labour force into working teams and production brigades, the formulation and implementation of production plans, the provision of cultural and welfare services, and political work and the education of members in the spirit of collectivism which is undertaken in each co-operative under the 'guidance of the Communist Party and the People's Government and with the help of the Youth League and the Women's Federation'. Here, we propose to invite attention to certain aspects of agricultural co-operatives which are related specially to attempts to raise the level of production, to achieve higher yields and to fulfil the targets of the national plan. We shall also refer to a few features of agricultural co-operatives in China which perhaps need to be watched more closely than may be the case at present. Our observations may be conveniently set out under the following heads:

(1) The place of individual peasants,
(2) Production plans of co-operatives.
(3) Organisation of the labour force,
(4) Incentives and remuneration,
(5) Resources, technical assistance and supplies,
(6) Problems of leadership,
(7) Possible weaknesses in organisation and programmes.

The place of individual peasants.

7.12. During visits to villages and co-operatives when information is furnished about the number of households and the proportion who have joined co-operatives one learns of the small numbers who have chosen at this stage to continue as individual peasants. From the accounts given, it appears that those farmers have remained outside

the co-operatives who are either not eligible for admission into a co-operative or who feel that they stand to gain more on their own. The first category includes, according to model regulations, former landlords, rich peasants and counter-revolutionaries whose status has not been changed and who have not yet qualified for membership under the warrant of the local people's council, and persons deprived of political rights. Poor peasants and middle peasants are specially encouraged to join co-operatives and active steps are taken also to draw in demobilised soldiers, dependants of revolutionary martyrs, soldiers and government workers and also new settlers. The second category includes, on the one hand, middle peasants who have sufficient manpower in the family and also adequate number of draught animals to enable them to cultivate their holdings efficiently and, on the other hand, poor peasants who are physically not so strong or who do not have a sufficient number of working members in their families to earn more through their labour in the co-operative than on their own. Another class of peasants who have, at this stage kept out are those who, while cultivating their lands, have additional means of livelihood other than agriculture so that their total incomes may be larger than those they could earn in the co-operative. The proportion of households which the two categories mentioned above cover is likely to diminish fairly rapidly. The earlier status and activities of individuals have lost much of their interest, and the conditions in which profitable individual farming can be undertaken have already ceased to exist. A word may be added here regarding a suggestion which is sometimes made to the effect that in India co-operative farming will succeed to a greater extent if it is confined, at any rate at first, to smaller peasants and those with somewhat larger holdings are excluded from co-operatives. Whatever the merits of this suggestion, it would be a mistake to base it on the analogy of the Chinese practice. In China, there are definite ideological considerations which led to the differentiation under the Agrarian Reform Law of 1950 of the class status of individuals as landlords, rich peasants, middle peasants, poor peasants and workers which has no counterpart in the Indian approach to social and economic development.

7.13. By far the most important aspect of agricultural co-operatives and indeed of the entire scheme of rural development in China is the emphasis on production. In October 1955, the Central Committee of the Communist Party directed all its workers to remember that "attention should be focussed on production, for that is the key issue". Co-operatives are told that as production develops they should make steady headway with specified kinds of welfare work. The level of production will determine the level and scope of welfare activities. The role of the co-operatives in increasing production is summed up well in Article 4 of the model regulations of elementary agricultural co-operatives issued in March 1955.

"The co-operative must bring about a steady expansion of productive activities, raise the level of agricultural production, make its members more efficient and increase yields.

The co-operative must work to plan. It should draw up plans both for the production and sale of products in the light of its own conditions and gear these plans to the production and purchase plans of the State.

With its land under centralized management and by working collectively the co-operative should, as circumstances permit, start using better farm tools, constantly improve farming skills, and, with the assistance of the State and working class, bring about the gradual mechanization and electrification of agriculture.

The co-operative should do everything possible to take full advantage of organized collective work, promote labour emulation, encourage and urge every member to work hard, and make vigorous efforts to create wealth both for the community and for each individual member".

Production plans of co-operatives.

7.14. Each co-operative is instructed to prepare its plan of production. At present, besides the annual plan which is prepared in April and runs for the agricultural year beginning in October, 7-year plans for the period 1956-62 are being prepared at various levels. The tasks of co-operatives in the field of production are laid down very clearly in Articles 25 to 29 of the model regulations which have been approved this year for agricultural co-operatives of the advanced type:

"In organizing and developing production, the policy of the co-operative shall be to work in a thrifty and diligent way. It must make energetic efforts to extend the scope of production, develop a diversified economy by combining agriculture with other related pursuits, practise strict economy and reduce costs of production.

The co-operative shall, in accordance with economic resources and local natural conditions, make vigorous efforts along the following lines to raise the level of agricultural production:

(1) build irrigation works; conserve water and soil;

(2) use improved farm tools and gradually bring about the mechanisation of agriculture;

(3) increase the supply of manure and other fertilizers by all possible means and make better use of them;

(4) use improved strains of crops;

(5) suitably and systematically enlarge the area under high-yield crops;

(6) improve the soil; level and terrace arable land;

(7) make rational use of all arable land and increase the area on which several crops a year are grown;

(8) improve farming methods: practise deep ploughing and intensive cultivation;

(9) eliminate and prevent insect pests, plant diseases and other natural calamities;

(10) protect and breed more and better live-stock; and

(11) reclaim waste land and enlarge the area under cultivation according to plan.

Every co-operative must make energetic efforts to learn the most efficient farming methods and do its utmost to find the best ways of increasing output and putting them into practice.

The co-operative shall, in accordance with the state plan and local conditions, make vigorous efforts to increase the output of the principal crops such as grain and cotton, and at the same time promote the cultivation of such other industrial crops as mulberry, tea, hemp, oil-bearing crops, sugar-cane, beetroot, tobacco, fruits, medicinal herbs, spices, etc.

Wherever necessary and possible, the co-operative shall actively develop forestry, animal husbandry, fishing, handicrafts, transport, sericulture, apiculture, poultry farming and other subsidiary occupations:

Provided that its normal production is not affected, the co-operative shall encourage and suitably help its members engage in subsidiary cottage occupations suited to individual management.

The co-operative shall draw up a comprehensive production plan in order to organize production on systematic lines.

The co-operative shall draw up a long-term plan covering a period of three or more years and giving all-round consideration to the various productive and constructive tasks it will undertake during this period.

Before the beginning of the farming year, the co-operative shall draw up its annual production plan under the following main heads: (1) sowing plans, output targets, and the necessary technical measures needed for ensuring fulfilment of these plans; (2) plans for forestry, animal husbandry, fishing and other subsidiary occupations; (3) capital construction plans; and (4) plans for employing all available man-power and draught animals.

To ensure fulfilment of the annual production plan, the co-operative shall draw up schemes for the progress of work in the various farming seasons and

stages of work, set definite production tasks and definite dates for their completion."

In the individual co-operatives which we had occasion to study, we found that considerable attention was being given to intensive cultivation and preparation of the soil, irrigation, drainage and conservation of water and soil, increased supply and better use of local manures, expansion of the area under multiple crops and high yielding crops, and the planting of trees by the roadside and along railroads. Except to the extent equipment or chemical fertilizers and insecticides, credit and technical assistance had to be obtained, the rest of the effort came from the members of the co-operative; their own labour was the major resource they were now able to tap to a greater extent than ever before.

Organisation of the labour force.

7.15. Among the difficult problems which arise when co-operative farming is undertaken with traditional techniques are those relating to the organisation of work and the provision of incentives for harder work. For peasants used to working in family groups with co-operation with others in certain operations only, a co-operative farm is a totally new situation in which complex questions of work distribution, work measurement, control and team work are involved. In this respect, in China, once the decision was taken that agricultural co-operation should precede rather than follow mechanisation, there were a whole set of new problems to be solved. While we were not in a position to form an assessment of the internal strains and difficulties which might exist in the average co-operative, from such observation as we have made, it appears to us *prima facie* that essentially workable methods for organising labour and ensuring team work and discipline as well as providing incentives for hard work have been evolved.

7.16. Since, through amalgamation or expansion of existing co-operatives, there has been a general trend towards increase in the size of the agricultural co-operative, one of the first questions to be considered is the relationship between the co-operative and the traditional village or, to use an expression common in China, the 'natural' village. Where a group of natural villages come into a co-operative and one of them is chosen as the headquarters of the co-operative it is common to base production brigades, which are the basic units for labour organisation, on natural villages. For instance, in the co-operative in Chekiang province of which an account has been given in the appendix to this Chapter, the labour force of 19 natural villages and hamlets was organised into 8 production brigades, the largest of which had 101 households and the smallest 68.

7.17. Each production brigade consists of a number of working teams. Thus, the 8 production brigades of the

Chekiang co-operative mentioned are divided into 100 working teams. As will be explained later, the remuneration of each worker is related to the work done by him or her. On the other hand, small private plots are allowed on a family basis and take account of the number of working members. It will be seen, therefore, that while organising the working members of a co-operative into teams and brigades whose size and composition could be adjusted to the nature of the task to be carried out, an attempt is made to retain a link between the working units and such natural background factors as the village of residence and the household to which a worker belongs.

7.18. A general meeting of members elects a management committee to run the co-operative. The management Committee is composed of 9 to 19 members, including the chairman and vice-chairman (or vice-chairmen) depending on the size of the co-operative. The management committee appoints the leaders of production brigades and of working teams, but usually it secures in advance the consent of the members of these groups to the proposed appointments. A supervisory committee is also elected by the general meeting or by delegates elected by a general meeting, its functions being to see that the chairman and members of the management committee abide by the regulations of the co-operative and the resolutions of the general meeting, that the accounts of the co-operative are in order, and that there is no corruption, theft, sabotage, waste, or damage to the co-operative's property. The chairman of a co-operative is a person with much power and responsibility as he 'represents the co-operative in its dealings with other parties'. The management committee of a co-operative generally works through sub-committees for different activities, the common division being between production and planning, finance, animal husbandry, culture, education, public health and welfare, and political education. Leaders of production brigades function directly under the production and planning committee which is generally headed by the chairman of the co-operative. There are no committees at the level of the production brigade, but within each working team arrangements for work, determination of the work points due to each member and other matters of mutual interest are decided in informal consultation during rest intervals or at the end of the day. In the arrangements for organising the labour force which have been described above there are considerable reserve, powers, especially with the leaders of production brigades and with members of the management committee, through which failures in team work, lack of application and indiscipline can be dealt with. At the same time, there is constant insistence on the need for democratic functioning, respect for the rights of working members, mutual help, emulation in labour and programmes for eliminating illiteracy and raising the cultural level of members. Decisions of a management committee are valid only when

they are adopted by a majority of its members and every management committee is directed to 'conduct its work in a democratic way; there must be no abuse of function or power'.

7.19. From the working of the early co-operatives, it has become clear that a co-operative cannot function efficiently without a piece-work system 'in accordance with the principle, to each according to his work, that is, more work, more pay'. To put the piece-work system into practice each co-operative has to decide upon suitable norms for various jobs and to fix rates of payment. As the model regulations for advanced co-operatives explain:

> "The norm for each job should be based on the amount and quality of work which an average member working diligently under normal conditions can do in one day on that particular job. It should not be set too high or too low. Payment for fulfilling the norm for a job is reckoned in units of work-days. The number of work-days a member earns for fulfilling the norm for each job is decided on the basis of the skill and intensity of labour involved and the importance of the job to the production of the co-operative as a whole. There should be suitable difference in the number of work-days awarded for fulfilling different kinds of norms. Such differences should be neither too small nor too great.
>
> When working conditions change, the management committee may revise the norms of the different jobs accordingly."

The norms fixed on the co-operatives studied by us showed that there was a high degree of adaptation to local conditions and local judgment, and there did not seem to be any rigidity in the details of the norms which had been determined. The system of norms is now fairly common and is replacing an earlier system in which work points based on skill and capacity for work were assigned to individual members, but norms and rates of payment for specific jobs were left undetermined.

7.20. The scheme of norms for various jobs which is the basis for the distribution of the total income of a co-operative among its members provides the chief factor making for hard work and is a useful way of combining both social and individual incentives. In the words of the model regulations for elementary co-operatives—

> "The amount of money and produce allotted for each work-day depends on the annual income of the co-operative as a whole. As a general rule, what remains of the total income of the co-operative in a

particular year, both in kind and in cash, after deducting production expenses, the reserve fund, welfare fund and dividends on land, will be divided by the total number of work-days worked by the co-operative during the year. The result is the value of each work-day. Thus the greater the annual income of the co-operative the more each work-day is worth. When the annual income of the co-operative drops, the value of each work-day drops too. Therefore, if a co-operative member wants a bigger income he must make an effort to earn more work-days; at the same time, each member must also do his best to increase the total income of the co-operative so that the value of each work-day increases accordingly. In this way, the personal interests of each member are correctly combined with the collective interests of the co-operative."

We have no reason to suppose that these aims are not being realised in practice, although it is not improbable that in many co-operatives there exist doubts and criticisms to which there may or may not be satisfactory answers. It is not easy for a visiting delegation to grasp such elements in a new situation in which large numbers of men and women are thrown together rather suddenly in a complex set of social, economic and organisational relationships such as a large agricultural co-operative represents.

7.21. During the past year or two, there has been much progress towards the system of fixing responsibility for work. In the beginning, each co-operative tended to work on 'the system of fixed responsibility based on the seasons of the year or on particular stages of field work'. From this co-operatives have tried to pass as quickly as possible to 'the year-round system of fixed responsibility' under which definite areas are assigned to working teams and production brigades for the performance of all the agricultural operations required throughout the year. Crop output norms are fixed for individual production brigades and it is the responsibility of the management committee of the co-operative to ensure that the requisite means of production are supplied. Production brigades which overfulfil their output norms are credited with additional work-days and those which fulfil less than 90 per cent. of their norms may, depending upon the circumstances, be even penalised. Prizes are awarded to individuals or units who distinguish themselves and there is little doubt that the banners which are a familiar sight of agricultural co-operatives in China are a form of social recognition increasingly valued by the officials of co-operatives as well as by the ordinary working members.

Resources, Technical Assistance and Supplies

7.22. The financial resources made available by the State for schemes of development in agriculture, water conservancy etc. and the system of agricultural loans by

the Agricultural Bank and credit co-operative are described in Chapter VIII. The various technical measures for assisting co-operatives in respect of improved seeds, fertilizers, insecticides and technical advice generally are described in Chapter IX. It is too early to assess the effects of these financial and technical arrangements on agricultural production. It would appear, however, that the reorganisation of agriculture on co-operative lines, which has been accomplished, would lead to a substantial increase in the extent to which local resources and surpluses are mobilised for implementing production programmes. Secondly, a measure of specialisation is now taking place within each co-operative so that for different activities, small groups of ancillary workers who can assist and carry out the instructions of technicians from the Technique Popularisation Stations are becoming available. In other words, once organized, the capacity of the Chinese peasant to absorb technical changes has increased and, with experience is likely to continue to increase. In the third place, with the growing demand for greater research and better technical services, the pressure on the various Government departments to equip themselves to provide the services needed is bound to increase rapidly. Already, the personnel available for field work and the number of Technique Popularisation Stations is being considerably increased and this is a process which will be accelerated. Thus, the steady expansion of financial resources, supplies and technical assistance from within as well as outside the co-operative combined with a fuller mobilisation of the available labour has created conditions in which the agricultural economy of China is in a position to achieve steady progress.

Problem of Leadership.

7.23. While there can be no doubt about the direction, the actual pace of progress is likely to be determined largely by the quality of leadership thrown up by the co-operatives. This is a difficult problem in any scheme of social or economic organisation and the leaders of Government and the Communist Party in China are well aware of its importance. The principles placed before co-operatives are aptly set out in article 8 of the model regulations for elementary co-operatives:

> "The co-operative should live up to the principles of democracy and strive for unity and constant progress.
>
> The co-operative should manage things in a democratic way. Officers of the co-operative should keep in close touch with members, discuss things with them thoroughly, and rely on the members as a body to run the co-operative well. They must not abuse their authorities and position or restrict democratic rights.

The co-operative should take any measures which will effectively strengthen internal unity, and foster comradely relations among members. There must be no discrimination against members who belong to national minorities, members who come as settlers, new members or women members.

The co-operative should take any measures which will bring about a steady rise in the level of political understanding of members; it should give them regular education in socialism and patriotism, and see to it that every member abides by the laws of the country. It should be ready to respond to the call of the Communist Party and the People's Government, and lead its members in the advance to socialism".

The success of agricultural co-operative during the past two years owes much to the cadres of the local branches of the Communist Party. There is stress on bringing the energies of the women and the younger members of the co-operatives into full play. Short-term training for local cadres is being provided on a large scale. We have ourselves come across Chairmen and other officials of co-operatives whose competence impressed us. Yet, at this stage, it is difficult to escape the conclusion that local co-operative depend heavily on direction and stimulus provided from county and district branches of the Communist Party and from cadres sent down to work in the village by the Peoples' Councils at higher levels. In the early days of co-operation, as indeed in much other rural activity, only a thin line may distinguish effort organised through direction and initiative from outside the co-operative and the contribution which a more or less self-governing co-operative community can make towards its progress and welfare when it becomes fully conscious of its needs as well as responsibility in the scheme of national and local development. As time passes, new elements are needed to sustain creative community effort.

Possible Weaknesses.

7.24. China's success in organising agricultural co-operatives on a national scale over a brief period of three years is an achievement of such proportion that we in India can learn much now and in the coming years from the successes and failures of the Chinese. We have felt some doubt whether in the unified administrative structure of China, local development plans are not so weak in their scope and the resources provided for them as to come in the way of the continuous growth of co-operation in agriculture as well as other fields of activity. Secondly, even in U.S.S.R. where agriculture is mechanised and the measurement of each person's work is relatively easy, the increase in the size of collective farms has tended to create a considerable gap between individual working members and those who constitute the committee of management.

Where existing agricultural techniques are being only gradually improved, it seems all the more essential that the primary unit should not become so large that the Chairman of a co-operative and members of its management committee are not in sufficient direct touch with individual members of the community. In a rural group, besides the incentive of higher reward for more work, there are other incentives and influences which need to work in the same direction. Those responsible for the development of agricultural co-operatives in China are conscious that laterly there has perhaps been excessive trend towards enlargement of the size, membership and area of individual co-operatives. There can be no rigid formulae on such a subject, but there would appear to be need for considerable caution in this respect. In the third place, on the whole Chinese agriculture is weak in animal husbandry. In the production and development plans of co-operatives more emphasis might be given to this aspect of the rural economy. This might require not only a larger allocation of resources but also perhaps certain changes of an organisational character. In the breeding and care of cattle, collective maintenance has a part to play but along with it there might be room also for individual families being enabled to breed and look after cattle as much for their own benefit as for the advantage of the community. Since fodder resources are at the disposal of the co-operative, such schemes of animal husbandry development would require special arrangements for making green and dry fodder available to individual families. Finally, for the time being, on account of extensive minor irrigation and drainage works, soil conservation, intensive preparation of the soil, conservation of local manure, tree-planting and other forms of agricultural work which can be undertaken locally, it has been possible for co-operatives to create a great deal of new work and thereby to afford fuller employment to local labour. Indeed by drawing women into the active labour force of the village larger numbers are being given work than was the case before co-operatives were organised. Fuller and more continuous employment on these lines has helped to reduce and, to a considerable extent, even to eliminate the worst forms of rural poverty. This is a lesson of great value to India. Nevertheless, it may be difficult for a rural economy so greatly dependent on agricultural operations as that of China to continue to expand indefinitely work opportunities in farms for which the main resource needed is organised human labour. A balanced rural economy would require considerable integration of agricultural and non-agricultural work. The general scheme of economic development in China with its stress on heavy and basic industries and machine building and on light industries organised in the main plants which are technologically up-to-date may fail to provide the avenues of diversification in employment necessary for relieving the pressure of

population on land. This has a bearing on the future development of agricultural co-operatives in China and the part they might play in solving, not merely the immediate problems of production and employment, but also those which will be accentuated by the continuous growth of population.

7.25. In applying the lessons of the Chinese experience of agricultural co-operatives to conditions in India, it is an advantage that this experience has been gained on a nation-wide scale and in a concentrated manner. The development of agricultural co-operatives is itself a continuous process and, as the Chinese recognise, many new problems will have to be faced and solutions found. The agricultural situation in India differs from that in China in several ways. In particular, here we have had and propose to have continuity of development such as has not been possible in China. Our social and economic changes follow upon one another and it is only over a period of a few years that a full picture emerges. Secondly, we place perhaps greater reliance on local planning and local initiative and we endeavour to build up an economic structure in which there should be integrated planning at the level of the village, the district, and the State and for different regions in the country. In the third place, on the whole we have less pressure of population than exists in China. Fourthly, while it is far-reaching in scope, our land reform is based fundamentally on the idea of peasant proprietorship. It is our goal to reorganise our rural economy on co-operative lines, but this is a task to be accomplished over a period of years. On the one hand, we have to take steps to organise co-operative credit, marketing and supply of consumer goods and co-operative cultivation and management of land. On the other hand, we have to take all steps in our power through the National Extension Service to enable individual peasant farmers to raise their yield, to increase productivity and achieve higher standards of living. Thus while we proceed towards co-operative development on sound lines, we have, at the same time, to develop efficient methods for peasant farming, and for organising various common services for peasants. In this context we have also much to learn from the experience of countries like Japan which have, over a period of several decades, achieved singular success in small scale agriculture.

A Typical Cooperative Farm

The Red Day Cooperative of the Shuang Ling hsiang of the Chekiang Province, has a typical history. Although the village was liberated in 1949, cultivation was going on in the old way until 1951. During those two years the main events were the setting up of a local supply and marketing cooperative society and expropriation of land belonging to political criminals and non-cultivating land-lords, and distribution of this land to landless labourers and poor peasants. In the old days there were altogether 23 land-lords in this area. While during land reform 11 rich peasants were left untouched, the lands of the other 12 landlords who did not cultivate themselves were expropriated. Some of them had left the village and the others were given the same share as the other farmers in the village and were reduced to the position of middle peasants. The average share of each middle peasant was about 11 mous (1·81 acres) per family. There was some variation in the size of these farms depending on the relative fertility of the soil. One of the members of the farm when questioned by us said that before the land reform his holding was 6 mous (0·99 acres) only and as a result of land reform his holding had been increased to 11·7 mous. (1·92 acre). A second man said that before land reform he owned 5 mous (0·82 acre) of land and as a result of land reform his total holding had been increased to 11 mous (1·81 acres). A third member said that his original holding was 3 mous (0·49 acres) only which became 7·5 mous (1·23 acres) as a result of land reform. In distributing land some consideration was given to the difference in quality of the various plots of land. Before Liberation none of these people possessed any draught animals. They possessed also very few farm implements and hence faced considerable difficulties in the cultivation of land efficiently. With a view to solving some of these difficulties 11 households out of a total of 678 formed themselves into a mutual aid team in 1951. They helped each other in farm work and took concerted action regarding the procurement of the supplies required by them as also the disposal of their produce. In forming this mutual aid team they had received special encouragement and help from the local Communist Party. In 1952 this mutual aid team was converted into a cooperative farm of the elementary type in which their land was pooled but they got dividend for the land as well as remuneration for labour. They told us that they pooled the land because they found that with all the strips lying scattered they could not follow any improved method of cultivation. The greatest difficulty was about irrigation and also about crop planning. There was also shortage of labour during peak sowing and harvesting periods in view of the fact that no landless labour was left as a result of land reform. The membership of the cooperative farm increased to 23 households in 1953 and to 56 households early in 1954. It was in September, 1954 that this cooperative farm was changed from the elementary type to the higher type *viz.*, collective type and the membership also increased to 154 households. In 1956 the farm further expanded and all the 678 households in the hsiang joined the farm. At the time of our visit the farm covered the whole hsiang which consisted of about 9 hamlets and 7 electoral districts. It had a total population of 2907 households and comprised of 3859·5 mous (635·66 acres) of dry land and 200 mous (32·94 acres) of fish pond. The total working population of the farm numbered 1527 of whom 903 were male

Red Day Cooperative Farm.

and 624 female. It was the practice to classify the labourers into full labour units and half labour units according to their ability. Healthy adults were usually classified as full labour units while old men, sick persons and children were classified as half labour units. On the basis of this criteria the total labour force of the farm was classified into 616 full male labour units, 287 half male labour units, 293 full female labour units, 331 half female labour units. The labour force was divided into 8 production brigades, each of which was sub-divided into a number of companies. Each Company in its turn was sub-divided into a number of production teams. The average size of a production team was 14 to 17 and there were altogether 100 production teams in this cooperative farm. The usual practice was to make a brigade responsible for all work in a specified area which might comprise of one or more hamlets. In certain other cooperative farms that we saw there was a special brigade for looking after animal husbandry but in the Red Day Cooperative farm all the 8 brigades were formed on an area basis and there was no special brigade for animal husbandry. On the average each brigade had been allotted 7 mous (1·15 acres) of land (of which 60 per cent was irrigated and 40 per cent dry) per full labour unit. For instance we were told that the 5th brigade of the farm was in charge of 3 hamlets and comprised of 3 Companies, each in charge of one hamlet. Since two of these hamlets were fairly big the Companies in charge had 16 to 17 teams each, while the Company in charge of the third hamlet which was small had only 6 teams. Each team in its turn was given a definite area to look after. One of the teams that we examined was in charge of 43·84 mous (7·22 acres) of irrigated land, 29·96 mous (4·38 acres) of dry land and 1·39 mous (0·23 acres) of fish pond. Altogether this particular brigade was in charge of 461 mous (75·92 acres) of irrigated land, 278 mous (45·78 acres) of dry land and 15 mous (2·47 acres) of fish pond. The general practice in the Red Day coopcrative farm was for members of the same family to work in the same team. But in some other cooperative farms that we visited we found that the practice was different and members of a particular family were distributed as between different companies according to their aptitude for different types of labour. Members of each team or company or brigade usually gave an indication of their preference regarding the appointment of their leader, but the final appointment was made by the Committee of Management of the Cooperative Farm. Since September, 1955 when the farm was converted into the collective type, dividend for land has been abolished. The members were paid entirely according to the amount of work put in. The system of payment was based on working points. There is no attempt yet to standardise these norms or rates in China. The actual rate was evolved separately for each farm, each type of operation etc. by the Committee of Management of each farm. The cooperative farm was, no doubt, given some guidance by Party members and the Agricultural Officers as to how to fix the norms and the rates, but what should be the point allocated to a particular type of work was left entirely to the members of the Farm and the norms and rates varied considerably from farm to farm. At the end of the season the Committee of Management of the Cooperative Farm made an assessment of the gross revenue, deducted from it all costs, paid tax to the State and any other dues like interest charges, etc., that might have to be paid, allocated certain proportion for the reserve fund, relief fund, etc. and then distributed the balance to the members according to the working points that they had earned during the season. The payment was partly in cash and partly in kind depending on circumstances. So far as kind payment was concerned, the members sold the portion that they did not require for their own consumption either directly or through the cooperative farm to the Government or to the supply and marketing cooperative. Besides the remuneration that they got from the cooperative farm, many

members earned a supplementary income from subsidiary occupations like silk reeling, pig breeding, chicken rearing, etc. Each member of the farm was also given a small garden plot of his own. The size of this plot differed from farm to farm. In the Red Day cooperative farm the rule was as follows. If a family had one member it got ·1 mou (0·016 acre) of land as private plot, for two members it got ·15 mous (0·024 acre) of land, for three to four members ·2 mous, (·023 acre) from five to six members ·25 mous (·041 acre) and for seven members or above ·3 mous (0·049 acre). The collective farmer was free to grow whatever he liked in this private garden plot and to consume or barter or sell the produce to fellow collective farmers and also in the local market.

The Red-Day farm had a Committee of Management comprising 21 members, one of whom was the Director, 5 were Vice Directors and one was the Accountant. It had also a Committee of Supervision comprising 11 members. All the members were elected for a period of one year by the general body of the farm.

Crop Planning for the Farm.

We were told that the Committee of Management of the Farm started preparing its own plan as soon as they received information about the annual plan for the country from the authorities concerned. In the light of the target fixed in that plan, they decided upon the targets for their own farm. For instance, in the current year, they formulated their own plan early in spring last soon after they received details of the country plan. In formulating this plan, they took into account not only the available area suitable for different crops but also the possible increase in production during the year and the fertilisers, insecticides, ploughs, animals, etc., that were likely to be available as also the performance in the previous year in the same farm and the performance in some of the neighbouring farms. Taking into account all these various factors and also the advice tendered by the Agricultural Officers and the representatives of the Communist Party, the Committee of Management of the Farm decided upon the following programme of production for the year 1956:

(1) 2541·7 mous (418262 acres) of land which was suitable for paddy was to be put under that crop. The target of average yield of paddy per mou was put at 703 catties (4705 lbs. per acre) as against 531 catties (3554 lbs. per acre) in 1955 and 512·5 catties (3430 lbs. per acre) in 1954. The total production of paddy expected in 1956 was 178377 catties (196,625 lbs.).

(2) 3,398·7 mous (559·8 acres) of land which was suitable for jute was to be put under that crop. The target of average yield per mou of jute fibre for 1956 was 481·5 catties (3223 lbs. per acre) as against actual yield of 484 catties (3239 lbs. per acre) in 1955 and 31 catties (2121 lbs. per acre) in 1954. The total production of jute was expected to be 1636260 catties (1,803,649 lbs.).

(3) In 3078 mous (507 acres) of land, it was proposed to grow rapeseed as a winter crop. The target for the production of rapeseed was put at 263818 catties (290,807 lbs.) in 1956. The crop which was harvested sometime earlier, however, turned out to be higher than the target *viz.* 296403 catties (326,725 lbs.).

(4) In 832·4 mous (137 acres) of land, wheat was to be produced as a winter catch crop. The target of production was put at 77146 catties (85,038 lbs.). The actual production, however, turned out to be larger *viz.*, 81639 catties (89,990 lbs.).

(5) In 412·7 mous (68 acres) of land, barley was to be grown as a winter catch crop and the target of production was put at 56151 catties (61895 lbs.).

(6) *Fish.*—In 270 mou (44 acres) of fish pond, it was proposed to produce 49045 catties (54062 lbs.) of fish. The target of yield per mou was put at 173 catties (1158 lbs. per acre) in 1956 as against 150 catties (1004 lbs.) in 1955.

(7) *Pigs.*—The cooperative itself possessed 3 boards and 200 swine and its target of production of young pigs in 1956 was put at 500.

(8) *Silk cocoons.*—The target for silk cocoons was fixed at 3337 catties (3678 lbs.).

(9) *Draught cattle.*—The farm did not so far possess any draught cattle. In, 1956, it proposed to acquire 14 animals.

(10) *Ploughs.*—The farm did not so far possess any ploughs. All the cultivation work was done by spades and hoes. For 1956, its target was to acquire 8 single share ploughs and 5 double share ploughs.

(11) *Insecticides.*—For 1955, the farm used only 300 yuans (Rs. 600) worth of insecticides. In 1956 its target was to use 2100 yuans (Rs. 4,200) worth of the insecticide known as 666. The price of the insecticide was about 25 cents per catty.

(12) *Chemical fertilisers.*—For 1955, the farm used 50,860 catties (56063 lbs.) of paddy and jute mixture (primarily ammonium sulphate). For 1956, it proposed to use 220,000 catties (242,506 lbs.) of these mixtures. The price was about 17 cents per catty.

(13) *Double cropping.*—For 1955, the farm had only 96 mous (52 acres) of land from which two paddy crops were taken. For 1956, they proposed to take two paddy crops in 756 mous (125 acres) of land.

(14) *Agricultural loan.*—For 1955, the farm borrowed 3,500 yuans (Rs. 7,000) from the Agricultural Bank. For 1956, they proposed to borrow 6,600 yuans from the Agricultural Credit Cooperative through which the loan from the Agricultural Bank were now being channelised so far as this country was concerned.

(15) *Water conservancy.*—For the year 1956, the farm did not have any new scheme of water conservancy. In 1955, 4 water pumps were set up as an experimental measure by the local Agricultural Department. Three of these pumps cost 3200 yuans (Rs. 6,400) each and one pump cost 5000 yuans (Rs. 10,000). After the pumps had started working and had proved successful, the Cooperative Farm took them over from the Agricultural Department. The cost of the pumps would be paid in instalments. The first instalment had not, however, yet been paid at the time of our visit. We saw one of these pumps. It was a 25 H.P. diesel pump manufactured in China. Its capacity was 20000 cu. sec. and it helped irrigate 1500 mous (247 acres) of land.

7.29. The agricultural tax of the farm was assessed at 632133 catties (696,800 lbs.) of paddy, the value of which was roughly equivalent to 9 per cent of the value of the total produce of the farm in 1952. This tax was to remain unchanged for three years from 1953-54. But how much of it would be paid in kind and how much in cash depended upon the production each year and also upon the requirements of the farmers. Since this particular farm specialised in the production of jute, rapeseed, etc., it could pay only a part of the agricultural tax in kind. For instance, in 1955 it paid 132133 catties (1,45,650 lbs.) of paddy as tax in kind and the value of the balance *viz.*, 500,000 catties (551,150 lbs.) of paddy was paid in cash. All the jute, rapeseed and other crops that the farm produced were sold to the Government purchasing agency at the price fixed by the Government.

On the whole, the farm appeared to us to be quite a prosperous one. Its gross income was over 12 lakh yuans, (Rs. 24 lakhs) and in 1955 about 95,000 yuans (Rs. 190,000) was kept in capital fund, 22,000 yuans (Rs. 44,000) in reserve fund and 3,500 yuans (Rs. 7,000) in relief fund. The annual income of an average farmer worked out to 500 yuans (Rs. 1,000) in 1955. The Director himself earned 955 yuans (Rs. 1,910) in 1955. They expected the income to go up substantially in 1956. We saw teams of workers carrying on different operations in different fields and all of them appeared to work quite hard. The figures of yield quoted by the farmers and mentioned earlier certainly showed substantial increase from year to year. How far this increase in yield was due to cooperative farming and how far due to various technical measures, *e.g.*, use of improved seeds, improved tools and implements, improved techniques, larger amounts of fertilisers, better use of water and also better season was not possible for us to say. But two things were clear. The organisation of cooperative farming had certainly made it easier to introduce improved techniques of production as well as fertilisers, insecticides, etc Similarly, cooperative farming was also compelling the relatively inefficient farmers to work harder than usual because while working in a team under the supervision of a team leader, he could not be as negligent as he might be when he was working on his own.

No. Surplus Labour

One would have expected that the replacement of a large number of small peasant holdings by one large cooperative farm would give rise to the problem of surplus labour in as much as it should lead to a considerable degree of rationalisation. We were told, however, that the case was not so. Whatever labour was released as a result of rationalisation was now being utilised in doing many useful things like building roads and contour bunds, planting shelter belts, extending irrigation channels, undertaking community work, keeping proper accounts etc. which the individual peasant could not or would not normally do. More labour was also now absorbed as a result of the greater intensification of cultivation. Formerly, there was very uneven distribution of the load of work. Sometimes farmers had to work for even 14 to 16 hours a day at one season while at other periods they had work hardly for 3 or 4 hours. Now the work load was more uniform and varied between 8 to 10 hours a day.

CHAPTER VIII

MEASURES FOR IMPLEMENTATION—ECONOMIC AND FINANCIAL MEASURES

8.1. As has been explained in the previous chapter economic measures like prices, marketing, supply, credit and tax policies are important instruments which are utilised to a very large extent by the Chinese authorities for the implementation of the plan and the achievement of their broad objectives.

8.2. The purchase and sale of foodgrains in China is a government monopoly. Commercial products like cotton, jute, tea, tobacco and skins and furs are also purchased by the Government. Minor produce such as fruit, eggs and poultry is purchased in the main by supply and marketing co-operatives. In the outskirts of towns vegetables are sold at special vegetable markets both to vegetable factories and to retail dealers. Consumer goods and small means of production and other agricultural requirements reach the villages through the network of supply and marketing co-operatives and the chain of shops controlled by them. Purchase as well as sale prices are fixed in advance and are maintained at levels determined by the government. Until 1952, the government bought and sold through the market. Following the completion of land reform a complex and integrated system of state-*cum*-co-operative trade has been developed. It may now be said that, except for transactions in fairs and markets organised by the State and the insignificant operations of petty private merchants, the supply of goods to rural areas and the purchase and procurement of agricultural produce are more or less completely within the scope of government's planning. The terms of trade between agriculture and industry along with the allied question of the relative levels of rural and urban wages are therefore among the central problems of agricultural and rural planning.

Foodgrains. 8.3. Food production increased from 106 million tons in 1949 to 152 million tons in 1952, a rise of nearly 43 per cent. It further rose to 154 million tons in 1953, 158 million tons in 1954 and 172 million tons in 1955. In 1955, out of a total food production of 172 million tons, paddy accounted for 77 million tons and wheat for 23 million tons. The growth of towns and cities specially with the increasing tempo of industrial development and construction and the need for exports of agricultural produce were important factors in hastening the transition from

a controlled market economy to the unified system of purchase and sale of foodgrains which has been developed since November, 1953.

8.4. Each year the State draws up a plan of unified purchase and sale of foodgrains. Its two main objects are the supply of adequate quantities for urban centres and for the non-farm rural population and the maintenance of stable levels of agricultural prices. To a limited extent private merchants still function as agents of the State, but they are not allowed to purchase and sell on their own as in a free market. Since March, 1955, each year, in accordance with the plan, the quantity to be purchased and the quantity to be sold are determined in advance. As an inducement to greater production, in fixing a target for State purchase of foodgrains for the year July, 1955 to June, 1956 the government declared that for a period of three years this target would not be raised.

8.5. Such a scheme of purchase of foodgrains calls for accurate estimates of production, determination of the requirements of consumption and of the surplus available, and a scheme of relative prices for the main agricultural products which can be maintained without excessive strain. The first aspect has been considered earlier. The government's declared policy is to limit the purchase of foodgrains to 80 per cent. of the surplus, leaving farmers free to dispose of such further surpluses as they may not themselves be able to use. There is no uniform or rigid method of estimating the consumption requirements of farmers. Members of each rural community are encouraged and expected to assess their requirements in terms of consumption needs of different families, requirements of horses, pigs, etc., seed requirements and consumption in such farms as soya bean, milk. For each province there are rough guides which can be followed. Thus, in the predominant rice growing areas 500 catties (551 lbs.) of (unhusked) paddy may be allowed for each person, whether adult or minor; elsewhere 360 to 380 catties (397 to 419 lbs.) of other foodgrains may be allowed. For seed, the allowance may be in terms of acreage to be sown as, for instance for paddy, 10 catties per mou or 67 lbs. per acre. For feeding a horse the allowance varies from 700 to 800 catties or (772 to 882 lbs.). The fact that local adjustments are always possible lends strength and flexibility to the system.

8.6. This is also achieved in a measure in the towns with the help of peoples' committees which exist in all streets. In urban areas, since October, 1955, fixed amounts of foodgrains are supplied. With 28 to 32 catties (31 to 35 lbs.) per adult per month as a norm, adjustments are made according to age and the kind of labour done. Where

need be, a larger quantity may also be allowed. Naturally no sales are permitted. Frequently, individuals draw less than the amounts sanctioned for them and return the food tickets which they do not need.

8.7. The foodgrains budget of the year July, 1955 to June, 1956 illustrates the magnitudes involved in the system of unified purchase and sale.

Foodgrains	Million catties	Million tons
Production (including unhusked)	3,39,000	166·99
Production (husked and milled)	2,92,000	143·69
State purchase, including agricultural tax . .	89,300	43·94
Sale in rural areas	36,000	17·72
Sale in urban areas	41,900	20·62
Exports	3,000	1·48

Other farm products.

8.8. For sales in rural areas as well in urban areas the Government maintains an extensive network of retail grain shops. Sales are made for cash against ration cards. In a village about 12 miles to the south of Peking, out of 500 households, 190 hold such cards, 60 of them being non-agriculturists and 130 agriculturists. In areas situated further away from towns where horticulture and floriculture are much less important, non-agricultural workers constitute the main body of card-holders.

8.9. In the early phase of State-purchase of foodgrains supply and marketing co-operatives functioned on behalf of the governments; in 1955 this responsibility was taken over by the Ministry of Foodstuffs. Similarly, supply and marketing co-operatives purchased on behalf of the government major products like cotton, jute, tea and silk cocoons as well as local products and minor produce like pigs, fruit, eggs, etc. The purchase of five main products cotton, jute, tea, tobacco and skins and furs—passed in January, 1956 to a new Ministry of Purchase of Farm Products from the Ministry of Foreign Trade which had previously been responsible for them. The purchase of silk cocoons continues with the Ministry of Foreign Trade and of local products and minor produce with supply and marketing co-operatives. Sugarcane is purchased by the Ministry of Light Industry and peanut and oilseeds by the Ministry of Foodstuffs.

8.10. For each of the items within its field, the Ministry of Purchase of Farm Products prepares each year an annual purchase plan. For cotton, detailed planning is undertaken, including the planning of areas to be sown,

but for tea and jute the Ministry confines its planning to advance contracts for purchase at pre-determined prices. The demand for cotton is divided broadly into (a) cotton textiles, (b) exports and (c) domestic uses *e.g.*, for 'padded coats'. The supply of cloth is planned so as to permit a person to purchase upto 60 Chin feet (or 70.5 feet) per year. Contracts for purchase are entered into with agricultural co-operatives. These indicate the area to be sown under cotton, the quantity to be produced and the quantity to be sold. Cotton producers are allowed to retain upto 3 catties (3.3 lbs.) per head, but cannot sell to private merchants. To encourage the cultivation of cotton and other commercial or 'economic' crops, various incentives are employed. The government offers to buy whatever quantities may be offered. Preference in the supply of oilcake and other concessions are given to areas which grow 'economic' crops. Thus, if 100 catties (110 lbs.) of cotton are offered for sale above the agreed quantities, the government is prepared to provide additional quotas of food (10 catties or 11 lbs.); cloth (10 Chih or 11.7 feet) and oilcake (50 catties or 55 lbs.). The purchase contract provides for the payment in advance varying from 10 to 25 per cent of the purchase price in two instalments, about two-thirds being paid at the signing of the contract and the balance when the seed has sprouted.

8.11. An elaborate machinery has been built up for the purchase of agricultural crops. At present there are 7540 purchasing stations, supported by smaller collection centres in villages. The bulk of them deal in all commodities, but there are some which are exclusively for buying cotton. Apart from purchase against contracts farmers also sell in State-organised markets at prices fixed by the government. As explained later, the agricultural tax is collected in the main in foodgrains but may also be paid in cotton.

Agricultural prices.

8.12. Within a year of Liberation the new regime brought the price situation under firm control. Compared to the average of 1950 which may be taken as the base the index of wholesale prices stood at 117.9 in 1951, 118.1 in 1952, 116.6 in 1953, 117.1 in 1954 and 117.8 in 1955. To some extent this stability has been due to the maintenance of price levels for the purchase and sale of agricultural crops. The main considerations in determining these prices are of course the need to increase agricultural production, and to improve rural incomes and at the same time to stimulate capital formation in the economy as a whole.

8.13. The basic prices to be fixed are those of food crops; in relation to these the prices of other crops are worked out. Thus, in one region, one catty (1.1 lbs.) of cotton is taken as being equivalent in value to 8.44

catties (9·30 lbs.) of paddy or 7 catties (7·7 lbs.) of wheat. There are variations in the set of prices adopted in different regions. These variations may be due to factors such as cost of transport, the natural conditions of production and relative profitability, and the price differentials which were customary in different parts of China even before Liberation.

8.14. The average purchase and sale prices of the principal foodgrains at the present time as supplied to us by the Chinese authorities are:

	Purchase price		Sale price	
	Yuans cents per 100 catties	Rs. As. per maund	Yuans cents per 100 catties	Rs. As. per maund
Wheat	9-30	13-14	..	..
Wheat flour	..	..	18-4	27-8
Paddy	6-1 (unhusked)	9-2	10-3 (husked)	15-6
Maize	5-3	7-14	6-9	10-5

We were told that prices of this order give to the farmer net profit of 10 Yuans per mou (Rs. 121 per acre) during good harvests. It was stated that in a normal year, in Hopei province, a mou of wheat and in Liaoning a mou of maize may bring a net profit of 6 to 8 Yuans (or Rs. 73 to 97 per acre) and in Hunan province the net profit for a mou of paddy may be 5 Yuans (or Rs. 61 per acre). It was also stated that on the present range of prices, in 1954, the State lost a sum of Rs. 300 million Yuans (or Rs. 60 crores) but this was felt to be justified by the gain to production through the maintenance of stable prices for the purchase and sale of foodgrains. It is not unlikely that with the reorganisation of agriculture along co-operative lines and the rise in real wages in rural areas which is already in evidence, in the coming years the terms of trade will become more favourable to agriculture than they have been in the past. The effort to carry out the long-term plan of agricultural development is also likely to exert a pressure in the same direction, so that agricultural prices may be expected to rise slowly but definitely during the next few years.

Supply of goods to rural areas.

8.15. As has already been explained in the previous chapter, for the supply of consumer goods and agricultural accessories to rural areas an extensive network of supply and marketing co-operatives has been built up. The network has taken the form of a pyramidical structure which functions under the overall leadership of the

All-China Federation of Supply and Marketing Co-operatives. The 'basic' supply and marketing co-operatives are at the level of the district or the sub-district, which may have a population of, say, 100,000 to 200,000. Above this level are the co-operatives for counties and provinces; below this level are retail shops which function as branches of the basic co-operative in individual hsiangs (administrative villages) and the 'natural' villages of which they are composed. In a hsiang there may be several retail shops functioning under the leadership and inspecting supervision of a central shop at the headquarters of the hsiang. Each shop, however, obtains its supplies direct from and reports its requirements to the basic co-operative. There may also be in each hsiang a few petty private retail shops. These sell fresh articles of common use such as tea, bread, cakes, etc., and, as agents of the supply and marketing co-operative, such articles as matches, cigarettes, wines, etc.

8.16. At the end of 1955, China had 27,067 supply and marketing co-operatives with a total membership of 162 million. These supply goods in turn to 183,182 retail business establishments which included 160,090 retail shops, 14,005 permanent stalls and 9,087 mobile supply and marketing teams. The total retail sales in villages amounted to 11,651 million Yuans (or Rs. 2330 crores). Purchases of farm products and raw materials by supply and marketing co-operatives in the villages amounted to 6.568 million Yuans (or Rs. 1314 crores). Each establishment in the supply and marketing system buys as well as sells. The greater part of the purchases of peasants take place in shops maintained by this system. A limited amount of buying and selling is undertaken in fairs where peasants mainly deal with one another. Barter also takes place as, for instance, when pigs are exchanged for fodder crops. In the case of minor products such as fruit, vegetables, eggs, poultry, etc. peasants are free to sell whatever quantities they may wish to.

FINANCE OF AGRICULTURE

8.17. In the Chinese Five Year Plan the investment outlay proposed for the Agriculture, Water Conservancy and Forestry Departments is shown as 6,100 million Yuans (Rs. 1,220 crores). It is, however, explained that this figure refers only to the provision for these Departments. This figure does not include loans nor does it include quite substantial investment in agriculture made in the budgets of the other departments, *e.g.*, Industries, Defence, etc. The total outlay by way of government expenditure and loans for agriculture, water conservancy and forestry is given in the Plan as 8,400 Yuans or roughly Rs. 1,680

crores for a period of five years. The break-up is given as follows:

2680 million Yuans (or Rs. 536 crores) for capital construction in agriculture, water conservancy and forestry;

2840 million Yuans (or Rs. 568 crores) in miscellaneous expenditure allocated by the State to agriculture, water conservancy and forestry departments;

300 million Yuans (or Rs. 60 crores) allocated to the army to reclaim waste land;

1060 million Yuans (or Rs. 212 crores) allocated as relief fund for rural areas; and

1520 million Yuans (or Rs. 304 crores) granted by the State for giving additional agricultural loans.

Part of the above outlay includes what will be reckoned in India as non-developmental expenditure, but it is not possible to indicate the proportion. Moreover, the figure for loans is not rigid and, in fact, has exceeded the plan provision considerably. Besides, it includes short-term as well as long-term loans. On the other hand, government expenditure does not appear to include the value of concessions given on sale prices of agricultural implements like water wheels, etc., which are manufactured by the State-owned factories. Due to these various reasons and also due to a difference in the accounting procedure it is difficult to give exactly the corresponding figures from the Indian First Five Year Plan but the following figures from our Plan may be mentioned here to give a rough idea of the relative order of magnitude involved:

Rs. 357 crores for Agriculture and Community Development.
Rs. 384 crores for Irrigation
Rs. 17 crores for Flood Control

Rs. 758 crores TOTAL

It will thus appear that investment in agriculture is much greater in China than in India. But the difference may be somewhat less than is indicated by the figures mentioned above. In the first place, from the Chinese figures, short-term loans and non-developmental expenditure have to be taken out. Secondly, although the official exchange rate is 1 Yuan=Rs. 2, in practice, the Chinese price level is somewhat higher than the Indian price level and, therefore, the real exchange rate would be somewhat lower. It has not been possible for us to make any precise estimate of these two factors. Nevertheless we feel that even after all the adjustments have been made the order of investment in China in the field of agriculture should work out to a considerably higher figure than in India.

8.18. As suggested earlier, in China, long-term and short-term loans given by the Agricultural Bank and its branches are over and above the appropriations provided in the plan. Investment by peasants over the period of the first plan is reckoned to be of the order of 10,000 million Yuans (or Rs. 2,000 crores), of which 6,000 million Yuans (or Rs. 1,200 crores) is to be used to increase fixed assets and 4,000 million Yuans (or Rs. 800 crores) as circulating capital. It is conceivable that with the setting up of agricultural co-operatives as the common pattern of organisation, investment from local resources may well exceed the levels contemplated when the plan was formulated.

8.19. The success of agricultural co-operation has recently made possible and also necessitated a considerable increase in the amounts made available by the Agricultural Bank by way of long-term and short-term loans. The total amounts of agricultural credit made available in different years has been as follows:

1950 . .	201 Million Yuans or Rs. 40 crores.
1951 . .	400 Million Yuans or Rs. 80 crores.
1952 . .	1070 Million Yuans or Rs. 214 crores.
1953 . .	1260 Million Yuans or Rs. 252 crores.
1954 . .	840 Million Yuans or Rs. 168 crores.
1955 . .	1000 Million Yuans or Rs. 200 crores.

The target for 1956 is 3200 million Yuans (or Rs. 640 crores). This is in the nature of a maximum limit which includes the amount outstanding at the end of the previous year and at the very least would involve a doubling of the amount advanced previously. Until August, 1956, the total amount loaned had reached the level of 2800 million Yuans (or Rs. 560 crores). The limit is fixed each year with reference to the requirements of production as well as the overall financial position of the economy, but may be changed, when necessary, during the course of the year if, for instance, floods occur or a typhoon causes heavy damage. In each rural area account is also taken of the level of production and the amount of purchasing power in the hands of the people.

8.20. The statistics of agricultural loans above represent loans advanced by the branches of the Agricultural Bank to agricultural co-operatives and credit co-operatives and, to a very small extent, to individual peasants. These loans are in addition to loans advanced by local credit co-operatives. An estimate of the amount annually advanced by credit co-operatives was not available, but it was understood that during the five months, January to May 1956, this amounted to 780 million Yuans (or Rs. 156 crores).

8.21. Agricultural loans are advanced at the same rates of interest throughout the country both by the Agricultural Bank directly and by credit co-operatives. Thus, loans for farm equipment and permanent improvements which may be for periods of 1 to 3 years and, sometimes longer, are given at the rate of 0.48 per cent per mensem. Loans to individual peasants, whether members of credit co-operatives or otherwise, for meeting consumption requirements are given at the rate of 0.72 per cent per mensem. For enabling poor peasants to take, shares in co-operative associations the rate of interest is 0.4 per cent per mensem. For short-term loans for seeds, fertilisers, etc., loans are given at the same rate as long-term loans, namely, 0:48 per cent per mensem. Credit co-operatives receive loans from the Agricultural Bank at the rate of 0.51 per cent per mensem. They are able to attract rural deposits at lower rates because the maximum rate allowed on rural deposits may go up to as much as 0.66 per cent per mensem, and the minimum rate is 0·24 per cent per mensem. The effect of this interest rate structure tends to be that, in the main, loans by credit co-operatives are given to an increasing extent for meeting consumption requirements and not for financing production.

8.22. Until March 1955, when the Agricultural Bank was set up, agricultural loans were handled by the agricultural department of the People's Bank. The People's Bank has more than 20,000 branches; about 16,000 of these are in rural areas, usually serving both the People's Bank and the Agricultural Bank. These include central branches at the headquarters of provinces, branch offices in administrative regions and countries and, at the district level 'business centres' which in many cases are still functioning as part of the local offices of the People's Bank. The main responsibilities of the Agricultural Bank are to provide loans and credit, to guide the work of credit co-operatives in rural areas, to receive deposits from agriculturists (largely through credit co-operatives) and to adjust the amount of cash needed in rural areas. Loans to producers' co-operatives are given primarily for (1) building up local irrigation and drainage works, (2) buildings, purchase of farm implements and purchase of draught animals and (3) for otbaining seeds, fertilisers and repair of implements. Loans to individuals, whether members of Co-operatives or otherwise, are given for the purchase of small implements, for obtaining raw materials for subsidiary occupations, and for meeting consumption requirements. As stated earlier, poor peasants are given assistance for taking shares in co-operatives. Loans for this purpose are generally given for five years, repayment starting usually from the third year. State farms also receive loans from the Agricultural Bank for the provision of equipment, buildings, livestock, irrigation facilities and working capital, but often these loans are for

periods of 5 to 10 years. Loans to individuals are, as a rule, for a period of one year only.

8.23. An important part of the work of the Agricultural Bank and of credit co-operatives concerns rural savings. The total amount of deposits from rural areas could not be ascertained, presumably because the Agricultural Bank's work in the field of rural savings and deposits is done on behalf of the People's Bank, but it was indicated that the deposits with credit co-operatives during the five months, January to May, 1956 amounted to 210 million yuans (or Rs. 42 crores). On current deposits, interest is allowed at 0.24 per cent per mensem, on deposits for periods exceeding six months, but less than a year at 0.51 per cent and on deposits exceeding a year at 0.66 per cent per mensem. The Agricultural Bank and the credit co-operatives also send out parties into villages to collect deposits. State bonds issued by the Government bring in about 600 million yuans (or Rs. 120 crores) every year and of this amount about 30 per cent is contributed by peasants.

Credit Co-operatives.

8.24. For credit as well as for farming, co-operatives exist only at the local level, which may be the village or a group of villages or a hsiang or sometimes an area exceeding a hsiang. There is no pyramidical co-operative structure in these fields. In 1955, there were 160,000 credit co-operatives, but this number is likely to diminish as small hsiangs get amalgamated into larger units. At present about 97.5 per cent of the hsiangs have credit co-operatives. Many of these credit co-operatives have developed from the credit teams which were organised voluntarily by peasants in the period immediately following land reform. The credit team itself is an older idea in China, having been tried out with success in the liberated areas during the period of the civil war and the war against Japan. The main functions of credit co-operatives are to assist production, specially by meeting the consumption requirements of peasants, to help peasants to join producers' co-operatives, to eliminate usury and to work as agents of the Agricultural Bank in their respective areas. Agency work such as transmission of loans on behalf of the Agricultural Bank is undertaken by credit co-operatives on a fee of 1 per cent of the money loaned. One half of this amount is paid when the loan is advanced and the rest when it is recovered.

8.25. While the People's council in the hsiang and in the district are responsible for prescribing forms and registers and issuing administrative instructions, with such assistance as they may need from the Agricultural Bank, the Bank is responsible for giving technical guidance and direction to credit co-operatives, and for training their cadres. Responsibility for appointment and promotion is

undertaken by each co-operative for itself. As is customary in China, each credit co-operative has a congress composed of all its members, a board of direction of management and a board of supervision. Both county and district branches of the Agricultural Bank have organised short-term training courses. The county branches arrange for training courses usually lasting a month and separately for (1) general policy and methods and (2) for specialised work such as accounting. District branches arrange for training for shorter periods such as a week or two weeks. Lectures and discussions for exchange of experience are the usual forms which the training takes, and by this time almost all personnel employed in credit co-operatives have gone through this degree of training. There are no training arrangements above the county level.

AGRICULTURAL TAXATION

8.26. The agricultural tax in China accounts for about 10 percent of the total revenue. In terms of money its yield was 2·75 billion yuans (or Rs. 550 crores) in 1953; 3.3 billion yuans (or Rs. 660 crores) in 1954 and 3.05 billion yuans (or Rs. 610 crores) in 1955, and receipts under this head in the budget for 1956 were placed at 2.8 billion yuans (or Rs. 560 crores). As a rule, the tax is collected in two instalments, in autumn and in spring. About 93 percent of the collection is in kind and the balance is in cash. Of the former 85 percent is accounted for by grain and 8 percent by cotton and peanut. In 1951-52, during the course of land reform, the new government took steps to fix standard annual yields per mou (that is 0.16 acre), on the assumption of average management and normal weather conditions. This assessment took account of the quality of land and also whether one or more crop were grown during the year. The standard yields fixed five years ago are still in force. The actual tax to be collected is calculated on the basis of these yields with reference to the area cultivated. In each region a standard crop is selected, for instance, paddy in South China, and the value of other crops is fixed with reference to this crop. In terms of grain, the tax amounted to about 38,801 million catties (or 19 million tons) in 1952; 35,100 million catties (or 17 million tons) in 1953 and 38,000 million catties (or 18.7 million tons) in 1954 and 1955. The proportion of the agricultural tax taken by the Central and Provincial Governments varies. In some cases, as in Sinkiang or Inner Mongolia, the entire collection is left to the province to facilitate the balancing of the provincial budget. As a rule, however, 60 percent of the collection is taken into the national budget and 40 percent is left to the provinces.

8.27. Besides the agricultural tax, there is a local surcharge known as 'additional tax' which is levied mainly

for the benefit of the hsiang and the county peoples' councils. The rate of surcharge was 15 percent of the tax in 1952, 12 percent between 1953 and 1955 and 22 percent in 1956. With increase in production and the success of co-operatives there are greater demands to be met by the peoples' councils at the county and the hsiang level. Whereas, between 1953 and 1955, out of the additional surcharge of 12 percent, the hsiang received about 7 percent and the county and the province about 5 percent, out of the larger surcharge for 1956 the share of the county and the province has risen to 15 percent. The peoples' councils at the level of the county and the province may, when necessary, provide additional grants for hsiangs. The proceeds of the 'additional tax' on land do not form part of the state budget of China.

8.28. The actual rates of taxation vary in different provinces according to local conditions. Thus, in some provinces uniform rates prevail, but in others the rates fixed varied with the amount of land held. The lowest rate anywhere is about 5 per cent of the annual production, but the highest may be as much as 30 per cent. In Liaoning province, for instance, the average rate works out to 21 percent of the produce and in Heilungkiang province it amounts to 23 percent of the gross produce. In a number of provinces, as for instance in Kwangtung, the rates which were determined at the time of land reform or immediately after it vary with the size of holdings from 5 to 30 percent of the produce. With the progress of agricultural co-operation, the unit of taxation is now the agricultural co-operative where the advanced form of co-operative is in existence, but individuals are liable to pay agricultural tax directly where the elementary form of co-operative still prevails.

CHAPTER IX

MEASURES FOR IMPLEMENTATION—TECHNICAL REFORMS

Role of Technical Reforms.

9.1. While both agrarian re-organisation and the economic measures described in the previous two chapters were necessary for the creation of conditions conducive to the development of Chinese agriculture, in the last analysis actual increase in production could be brought about mainly by technical reforms. Land reforms and co-operation were useful because they created conditions under which farmers could have the will and the ability to adopt improved techniques. Agricultural finance was necessary because otherwise it would be beyond the means of many farmers to adopt improved techniques. Price, planned purchase and tax policies were important because adequate incentives and disincentives were needed to induce the farmers to utilize improved techniques of production in the desired manner and for the production of desired crops. It is true that Chairman Mao tse-Tung himself had put relatively greater emphasis on land reforms and co-operation but he did so perhaps not so much because he felt that land reforms and co-operation by themselves would increase production but because he was of the view that unless these measures were carried out, the Chinese farmer would not take to improved techniques of production with enthusiasm. Technical reforms must be, therefore, regarded as a very important feature of China's agricultural development.

Types of Technical Reforms.

9.2. By technical reforms, the Chinese authorities mean not merely mechanisation and the adoption of modern techniques but also the popularisation of old techniques which have been traditional in some areas or with some groups of farmers but have not been popular in other areas. In fact, in China, unlike in Russia, mechanisation has been given a relatively low priority during the first two or three five year plan periods. The Chinese authorities realise that until their country is sufficiently industrialised so as to syphon away a fairly large number of people from the rural areas to urban areas, or rural industries are developed very considerably, mechanisation of agriculture may accentuate the problem of rural under-employment. Therefore, they are not putting much emphasis on mechanisation for the present except in state farms or newly reclaimed areas or sparsely populated areas. The technical reforms which they are emphasising at present are mostly the well-known methods of intensive cultivation. These methods have been listed in Chapter

V and are (i) more intensive use of manures and fertilizers, (ii) soil improvement, (iii) use of better seeds, (iv) extension of multiple cropping areas, (v) planting more high yielding crops, (vi) improving farming methods, (vii) wiping out insects, pests and plant diseases, (viii) use of improved farm tools and gradual introduction of mechanised farming, (ix) water conservancy projects and water and soil conservation, and (x) opening up of virgin and idle lands, and extending cultivable lands. As has been explained in previous chapters, these measures are being popularised and implemented through special campaigns undertaken by the members of the Communist Party, organising co-operative farm workers into brigades and work teams with a view to mobilising their labour in the most effective manner, organising exhibitions, conferences and visits to model farms with a view to exchanging experiences of good cultivation, bringing out a large number of publications and posters describing the experiences of the good farms and the results of scientific research and imparting technical knowledge through a special organisation, namely, the Technique Popularisation Stations.

Technique Popularisation Stations.

9.3. There is no technical measure in the field of agriculture practised in China which is really new. But it is the manner in which these technical measures are being implemented which is remarkable. In Community Project areas in India, we have village level workers who are general purpose men and whose job is to enthuse villagers and to act as the channel through which information about improved techniques can be passed on from research workers to actual tillers of the soil. In China, it is the directors and vice-directors of the co-operative farms and the members of the Communist Party working in villages who function as general purpose workers at the village level. They may not be themselves technical experts but they devote their full energy in enthusing the farmers to use improved methods and transmitting the information about improved technique from scientists at higher levels to actual tillers of the soil. Unlike in India, these workers at the village level in China whose number runs into millions do not have to be paid by the state. They work in the village itself and generally get paid by the co-operative farms on the basis of working points like any other member except where they have other sources of income. This means that China has been able to have a very large general purpose extension agency at a much smaller cost to the state than we have been able to have in India. For agricultural extension work, however, there is a specialised technical organisation in rural areas of China called Agricultural Technique Popularisation Stations maintained by the provincial Department of Agriculture. These Stations vary considerably in size as also in character from one part of the country to another. In a big suburban area, *e.g.*, in Canton, the

station may be quite a big one and may have as many as 30 to 40 technical personnel and may cover about 60 to 70 hsiangs. In a rural area, *e.g.*, Shensi, each Technique Popularisation Station may have only 4 to 8 technical people and may cover 2 to 3 hsiangs. All the workers in these stations are full time employees and are paid by the State. Today in China, there are over 10 thousand Technique Popularisation Stations and this means that, on an average, there is one Technique Popularisation Station for 20 hsiangs. The Chinese authorities are, however, rapidly multiplying the number of these stations. Naturally the greatest progress has been made so far in an old liberated area like the Shensi province while more recently liberated area like Kwantang province is relatively thinly covered. But the objective seems to be to multiply these stations until the whole country is covered as intensively as the Shensi province is today. It may be, therefore, useful to note here that the Shensi province has a rural population of 1·5 crores and a total cultivated area of 113 lakh acres as compared to a rural population of 1 crore and total cultivated area of 139 lakh acres in the Punjab. This is a mainly wheat and millet growing area, the total acreage under wheat being about 60 lakh acres. In this province, there are 1069 hsiangs, each having between 500 to 1,000 families. There are altogether 581 Technique Popularisation Stations each having a staff of 4 to 8 agricultural specialists. This means that there is on the average one Technique Popularisation Station for about 2 hsiangs. Besides these 581 Technique Popularisation Stations, there are 100 veterinary stations, 14 machine tractors stations, 84 state farms, 6 secondary agricultural schools and 4 agricultural experimentation stations in the province. The total staff of the Agriculture Department of the province is 9,788 at different levels. This shows the degree of intensity with which the Chinese authorities are trying to cover their countryside with agricultural personnel. The rate of increase in the number of the Technique Popularisation Stations is also remarkable. There were only 3,500 stations in 1954, the number rose to 8,000 in 1955 and to 10,000 by the summer of 1956 and it is proposed to increase it to 16,000 next year. These stations are staffed by agricultural and animal husbandry experts and some of the more important stations have specialists in charge of different kinds of farming activities, such as cropping, seed selection, care of livestock, use of farm tools and machinery, etc. These stations also serve as centres for giving special short-term training to co-operative farmers. In some cases, the farmers go to the station in their off-time for the purpose of training and in other cases the technical experts from the station go to the villages and give training to the farmers on the spot. Upto the end of May, 1956, 5,08,000 farm workers had been trained in the short course. The trainees included directors of co-operative farms, accountants, agricultural and animal husbandry technicians,

brigade and team leaders, etc. Many co-operative farms have also set up their own organisation to study farm techniques with the help of these Technique Popularisation Stations. These stations thus play an important part in introducing better farming methods, such as, use of improved types of farm tools and better seeds, making better use of fertilizers and manure, adopting plant protection measures, improving agricultural skills, etc.

9.4. The role of a Technique Popularisation Station in developing China's agriculture can be best understood if we describe here a station that we visited near Peking. This station called the Nanyuan Technique Popularisation Station was first established in 1953 with a staff of 3 technical and 2 administrative personnel. There were, however, some teething troubles and the station was closed in 1954 due to shortage of properly qualified technicians. The station was, however, re-started in 1955. At the time of our visit, it had 14 members on the staff of whom 9 were technical. Among these 9, 4 were for field crops, 4 for animal husbandry and 1 for vegetables. In this particular Technique Popularisation Station, agriculture and animal husbandry were combined but there was a proposal that with the increase in the volume of work, the animal husbandry section would be separated from the agriculture section in the near future. Of the 5 non-technical men. one was the director, who was a former member of the liberation army, 2 were clerks and 2 were ordinary labourers. This station was under the technical control of the Bureau of Agriculture of the Peking Municipality and under the administrative control of the District People's Council. The main functions of the station were:

(1) popularisation of scientific knowledge regarding agriculture, *e.g.*, use of fertilizers, growing of field and vegetable crops, methods of controlling diseases, insects and pests, improvement in the method of cultivation and management of land, etc.

(2) Summing up the experience of advanced farmers and extending this advanced experience to other areas;

(3) Helping the farmers in the knowledge of animals both in regard to breeding and prevention of animal diseases;

(4) Training of technical cadres for the co-operative farms.

This station serves 14 hsiangs in which are now included 37 co-operatives and about 18,700 households. The farthest farm is at the distance of 7½ miles from the station. The station has a hostel where the co-operative farmers who come for training are housed. The period of training varies according to the subject. For example, the period of training for pig feeding lasts 7 days, for cattle feeding 10

days and for vegetable growing 12 days. Generally, lectures are also given on the cultivation of crops and other related subjects. At these discussions, the model workers also narrate their experience and group discussion is encouraged. Technicians from the Agriculture Bureaus and Agricultural Research Institutes also participate in the discussions. During the period of training, they earn workpoints from their respective co-operative farms. Government provides them with cheap meals at a concessional price of about 5 annas per day. The farmers are given training in the hostel during the off-season, namely December to February. During other seasons, the technicians from the station go to co-operative farms and give the farmers on-the-spot training. This two-way traffic helps a great deal in extending knowledge to the farmers and in collecting first-hand information regarding problems of the farmers to be passed on to research workers for investigation. The station had last year 159 trainees in animal care, 102 in pig raising, 182 in field crops and 215 in vegetable growing. Besides these people who received training at the station itself, 1,261 peasants received training in the villages during the busy season. The type of advice and help which the station gave to the farmers may be described by a few illustrations. Last year, the early sowing of cotton was completed by about the 8th of April. A complaint was received that seeds did not germinate even after 2 weeks although the normal time of germination was only one week. Wherever the seeds had germinated, the germination was defective. The technicians of the station discovered that this defective germination was mainly caused by the fact that the temperature was unduly low at the time of sowing. The cultivators were advised to resort to transplanting the cotton seedlings in gaps if they were not very many or else to sow afresh. On another occasion there was an attack by an insect pest called army worms. The technicians of the station tested the outbreak with a special apparatus and discovered that the attack might soon become very serious. An intensive spraying with the insecticide 666 was immediately undertaken. This year, as a result of heavy rains the cotton crop was seriously damaged. The technician of the Station himself was unable to suggest a remedy. He, therefore, brought experts from the North China Agricultural Scientific Research Institute down to the farm who suggested various measures for different types of damages. The technicians of the station were equipped with soil testing kit on the basis of which they advised the co-operative farmers regarding manurial schedule, lime requirement of soil, etc. They had other equipments also *e.g.*, equipment for testing germination percentage of seeds, soil thermometer, etc. They kept a record of the temperature of the soil and advised the farmers as to the right time when seeds should be sown. They also carried out in the co-operative farms different demonstrations and experiments on thick sowing, close

planting, deep ploughing, etc. with the help of the farmers themselves and persuaded the co-operatives to demarcate separately areas for the production of improved seeds on which proper roguing was insisted upon. At the time we visited the station, one of the important items of work on which they were busy, was in regard to advising the cultivators on the topping of cotton plants to encourage more fruiting branches on the plants. Topping of cotton like close planting appeared to be two techniques which were being encouraged very much in China. In India, however, neither of these two techniques have been found to be particularly advantageous. The station had a small library and a collection of extension literature and its main hall was decorated with instructive posters, charts, etc., all relating to various techniques for the improvement of agriculture. There was no artificial insemination centre attached to this station. There were, however, 2 holstein stud bulls and 2 stud horses which were being maintained by one of the co-operative farms attached to the station and were used for the purpose of breeding in this particular area. The station had no land of its own and whatever experiment it wanted to carry out was done in the lands of the co-operative farms of the area and with the co-operation of the farmers themselves. The annual budget of the station was reported to be about Rs. 30,000 and the expenditure on staff was about Rs. 24,000, the balance being contingent expenditure. The junior-most technician in the station got a salary of Rs. 60 per month while the chief technician got a salary of Rs. 180 per month.

9.5. These Technique Popularisation Stations are thus playing an extremely important role in the development of China's agriculture. They are educating the farmers in improved techniques and passing on to them the results of research. On the other hand, they are also helping to maintain contact between the farmer and the research worker and to pass the problems of the former to the latter. They are also providing a very useful balancing factor in the whole process of development of co-operative farming. Quite a large part of the progress that has been achieved in China so far is, no doubt, due to the enthusiasm and hard work, better organisation, etc. But a stage will come when there will not be very much further scope for increasing production through these factors alone. It is at this stage, that the technical service provided by the Technique Popularisation Stations will come to aid and will help to make up more than what may be lost through the natural wearing off of initial enthusiasm with passage of time. The prospect for future development of China's agriculture has indeed become bright as a result of the organisation of these Technique Popularisation Stations. One special thing about the Chinese Technique Popularisation Stations is that they are not multi-purpose organisations. Their main work is agricultural extension and they stick to that work only. They have nothing to do

with the provision of credit or provision of supplies. This is an important point which is worth underlining here. In India, much of the time and energy of the village level workers and even of technical officers at higher levels are taken up by the need for looking after credit, supplies, etc., and by the fact that they have to look after not only agriculture but also a number of other subjects like education, health, etc. We feel that the fact that the Technique Popularisation Stations in China are not multi-purpose institutions but are primarily agricultural extension organisations has been responsible to a considerable extent for the concentrated attention that the Chinese farmers are paying to increasing their production today.

Use of manures and fertilizers.

9.6. Of the various measures which the Technique Popularisation Stations are trying to popularise and through which agricultural production is sought to be increased, the fullest utilisation of every possible source of manure and the introduction of improved methods of fertilising are amongst the most important. The Chinese farmer has always been well known for the intensive use that he makes of the manurial resources of the village. He, does not therefore, require much pursuasion. What the Technique Popularisation Stations are trying to do is to ensure a more scientific use of the manurial resources of the village, popularise correct doses and more effective and sanitary methods of application, promote the use of chemical fertilzers, carry out soil tests and advise the farmer regarding the best methods of fertilising the soil for growing different types of crops. About 85% of the total cultivated area in China is manured through organic manures such as night soil, stable manure, compost, green manure crops, mud from the bottom of canals and ponds rich in organic matter, oil cakes, etc. and through chemical fertilizers. It is estimated that some 50% of the manure used is night soil and stable manure, 20 to 30 per cent. compost and 10 to 15 per cent. green manure. The use of chemical fertilizers is relatively small but it is steadily on the increase. As against 1·2 lakh tons in 1949, it has risen to a figure of 10·3 lakh tons in 1955. The target for 1956 is 17·3 lakh tons. Every effort is being made to utilize night soil and stable manure. The utilization of night soil is estimated to be about 70 per cent. of the potential production and that of stable manure to be 60 per cent.

Night soil.

9.7. China's agriculture is noted for its use of human excreta or night soil of which some 200 million tons are available per year. Night soil has been used there for centuries and has been one of the chief factors responsible for the maintenance of soil fertility in spite of intensive exploitation of land. In all Chinese towns which do not have modern sewage facilities night soil is collected from every house each morning. Processions of wheel barrows, carts or boats carry it to the countryside where it is carefully applied to each growing plant. In South China with year round cultivation, it is commonly used fresh in liquid

form but in North China with seasonal agriculture, it was formerly the usual practice to dry it for future use but this practice is now being discouraged. In the North, human faeces was added to animal manure and other refuse and the mixture was used on the land. The solid excreta was collected from towns and cities and made into cakes which were placed on the ground to dry, either without further treatment or mixed with animal manures, soil or ash. The cakes dry up in about a week and they are then ready for sale. On an average, the composition of such cakes is about 9 per cent. moisture, 59 per cent. ash and 1·7 per cent. nitrogen, 1·6 per cent. $P_2 O_5$ and 19 per cent. carbon. There is considerable loss of nitrogen during this drying process. Night soil is a carrier of intestinal parasites if used without treatment and the practice of utilising fresh faeces is a danger to public health. Hence the common method now recommended by the Technique Popularisation Stations is the wet method that is followed in South China. It consists of adding to fresh night soil water equivalent to ⅓rd of its weight and preserving the liquid in pits or jars. It gets ready for use within two weeks to a month or more depending upon the temperature and is considered free from danger as fermentation during storage kills the pathogens. The collection and handling are attempted to be done under hygienic conditions. In the villages, the farmers use the pit latrines and cover up the faeces with soil and apply ashes and lime and also use 666 as disinfectant to control the fly nuisance. In this way the danger of spreading intestinal parasites is lessened. The produce from village latrines is collected at monthly or two monthly intervals and put into big receptacles or pits which are lined to which water is added one-third its weight. It is then allowed to ferment for about three months before use. Where urine is conserved, the usual process is to add water three times its weight and it is allowed to ferment for about a fortnight or a month and is then applied in the liquid form. The analysis of the liquid fresh and fermented night soil is as under:—

	Fresh	Fermented
Nitrogen . . .	0·85%	0·5%
$P_2 O_5$	0·26%	0·2%
$K_2 O$ . . .	0·21%	0·3%

The night soil in the liquid form fermented as noted above is used both as a basic fertilizer as well as for top-dressing. It is applied at the rate of about 6,500 to 13,000 pounds per acre. If the night soil is mixed with earth and fermented, the rate of application of the liquid is about 26,000 pounds per acre.

Stable Manure.

9.8. Besides night soil, a very large volume of stable manure and mud from the bottom of canal and ponds which is rich in organic matter are also being used in China for manurial purposes. The dose of stable manure

is about 6,000 lbs. per acre and that of mud about 13,000 lbs. per acre.

9.9. Considerable emphasis is also being put in China on the use of green manures. The common green manure crops in the South are Astragalus sinensis and Medicago denticulata. They are sown in early October and cut for green manuring towards the end of April. Average outturn of green matter per acre is about 13,000 pounds and when the growth is very good it may reach as high a figure as 52,000 pounds. In the Chekiang province, Astragalus sinensis is sown in early October by broadcasting the seed in the standing field of rice and is cut and applied to the soil towards the end of April. Astragalus is also sown after maize for green manuring or in the standing crop of maize which is generally harvested by the end of October. It is also sown in alternate rows along with wheat or rape seed crop. In some areas, the green manure crop is also grown in high lying fields. The green matter obtained is applied to two or three times the area on which the green manure crop is sown. In the province of Shensi, in irrigated lands one of the methods of enriching the soil is to grow alfalfa for one or two years and after the last cutting, plough it into the soil. It is sown in February or March in the standing crop of wheat. After wheat is harvested, the field is irrigated and alfalfa makes a good growth. It is ploughed in by the middle of August and subsequently wheat can be sown on it in September. The extent of green manuring varies from State to State. In the Chekiang province it was reported that 40 per cent. of the rice area is green manured.

Oil-cakes.

9.10. In China, oilcakes, mostly soyabean cakes, are also used in very large quantities for manurial purposes. The consumption of oilcakes increased from 32·7 lakh tons in 1949 to 45 lakh tons in 1955.

Chemical Fertilizers.

9.11. Along with the campaign for a more intensive use of night soil, stable manure, manurial muds, green manure and oilcakes, the Technique Popularisation Stations are making an intensive effort for extending the use of chemical fertilizers. Formerly the Chinese farmers did not use chemical fertilizers in any appreciable quantity. In fact in two of the villages that we visited the farmers had not made any use of chemical fertilizers until they were pursuaded to do so by the local Technique Popularisation Station this year. We were told that there is already a very large demand for chemical fertilizers and at present the limiting factor is supply rather than demand. China produces only one-third of the total quantity of chemical fertilizers that she consumes at present. The balance is imported from the U.S.S.R. and other countries of eastern Europe. New factories are, however, being set up in China for the production of chemical fertilizers. In the First Five Year Plan, it is proposed to increase the production of ammonium sulphate from 181,000 tons in 1952 to

5,40,000 tons in 1957 and of ammonium nitrate from 7,486 tons in 1952 to 44,000 tons in 1957. The rate at which the use of chemical fertilizers has gone up in China in recent years will be seen from the following table:

Year	Chemical Fertilizers
1949	1·2 Lakh tons
1950	1·6 Lakh tons
1951	2·2 Lakh tons
1952	3·0 Lakh tons
1953	6·0 Lakh tons
1954	8·2 Lakh tons
1955	10·3 Lakh tons
1956 (Target)	17·3 Lakh tons

9.12. The soils in China are generally deficient in nitrogen as well as in organic matter. Technique Popularisation Stations generally advise the farmers to use chemical fertilizers in combination with organic manures. For instance, in the Shensi province farmers are advised to apply compost or stable manure at the rate of about 26,000 to 40,000 pounds per acre at the time of deep ploughing in November. Ammonium sulphate is applied to the wheat crop as a top-dressing at the rate of 66 to 100 pounds per acre. Mixing the chemical fertilizer with wheat seed in equal quantity at the time of sowing is now being recommended. In the rice region, the compost manure is applied at the rate of about 6,500 pounds per acre, or mud from the bottom of canals or ponds is applied at the rate of 13,000 pounds per acre before transplanting. Subsequently, the manure may be applied two or three times as top dressing at the rate of about 6,500 lb. per acre of night soil at the interval of about 20 to 30 days. Application of fertilizer to the paddy crop in the earing stage is considered to be very important. Night soil may be replaced by Ammonium Sulphate in which case the rate of application at each time may be about 30 to 60 lb. per acre.

9.13. As regards the value of applying chemical fertilizers in conjunction with organic manures, we were given the following results of fertilizers experiments carried out during 1947 to 1951 at the East China Agricultural Scientific Research Institute, Nanking. The per cent. yields of paddy obtained under different treatments were as under:

Treatment	Yield in percent
1. No manure	100·0
2. Ammonium Sulphate	122·5
3. Organic Manure alone	117·6
4. Ammonium Sulphate + Organic Manure	133·4

The yield of the control plot was about 3,000 lbs. per acre.

9.14. Experiments are currently being conducted in China on the use of different types of nitrogenous fertilizers such as Ammonium Sulphate, Ammonium Nitrate and Urea both on the state farms and on the co-operative farms. Experience of the past two years shows that for paddy, ammonium sulphate is better than ammonium nitrate and that urea is as effective as ammonium sulphate. For dry crops, however, ammonium nitrate appears to be better. Experiments will have, however, to be continued for some more years before a definite conclusion can be reached. We found that phosphates were not yet being used on any large scale in China. Red soil areas of China are, however, deficient in phosphate and we were told that good responses were obtained on them by the application of superphosphate. We felt that the use of phosphates required to be popularised much more than it had been done so far.

Bacterial Fertilizers.

9.15. Another line of interesting work that is going on in China is inoculation of legumes such as soyabeans and peanuts with improved strains of nodule forming bacteria. Biologist Chang Kung Shien and his research associates in Shenyang Institute of Soil and Forestry have increased the yields of soyabeans by 10 per cent. by treating them with nodule forming bacteria. The use of bacterial fertilizers like nitrogen, azotobacter, phosphobactor, etc., has developed very considerably in Soviet Russia and the Chinese scientists are carrying on experiments with some of these bacteria with a view to adopting them to Chinese conditions.

Scope for developing local manurial resources and utilization of chemical fertilizers in India.

9.16. There is considerable scope for the development of local manurial resources and use of chemical fertilizers in India on which special emphasis needs to be put by the extension staff. Estimates show that in India 227 million tons of dry cattle manure are available annually, making an allowance for another 227 million tons which are used as fuel. This would mean a potential quantity of 1·24 million tons of nitrogen annually. If to this is added the nitrogen in the urine which after allowance for losses should give about 1·58 million tons of nitrogen, the potential quantity of nitrogen comes to 2·82 million tons annually. The potential availability of phosphate and potash from these sources are estimated at 0·76 and 0·99 million tons respectively. As against the potentials available, the percentage amounts utilized for the present are only about 24·4 per cent. of nitrogen, 32 per cent. of phosphate and 46 per cent. of Potash. Similarly, as regards urban waste, there are some 3,000 urban centres in India which require to be brought under Municipal Town Refuse Compost Scheme. There are, for the present, only 1,926 centres working. Potential night-soil compost production is some 4·3 million tons as against the actual production of some 2 million tons. Besides, there is a large number of village Panchayats with a population of 3,000 to 5,000 where the night-soil composting can be taken up. Sewage and sullage

also need to be properly utilized. As regards bone utilisation, out of 0·45 million tons only about ⅓rd is at present utilized for the crushed bone industry and the production of bone-meal. A large programme for the utilization of bones is needed for which a number of bone digester plants need to be set up in the countryside. Green manuring is another field in which there is considerable scope for extension.

9.17. The present consumption of nitrogenous fertilizers in terms of ammonium sulphate is estimated at about 0·6 million tons which is proposed to be raised to 1·85 million tons by the end of the Second Five Year Plan and that of superphosphate from 0·1 million tons to 0·72 million tons.

9.18. The present knowledge of many of the farming practices particularly those describing the patterns of consumption of manures and fertilizers is inadequate in formulating the general policy regarding the supply of fertilizers. Some work has, however, been undertaken under the auspices of the Indian Council of Agricultural Research for carrying out a pilot survey in one district of each of the States of Madras, Andhra, Bihar and U.P. representing the six different agricultural regions. The object of the scheme is to secure data regarding fertilizer consumption, distribution of the same among different crops, cultivation practices connected with fertilizer use and so on. The field work has so far been completed in the West Godavari District of Andhra State and the Coimbatore District of the Madras State. Preliminary analysis of the data collected in West Godavari District has been completed which brings out some interesting facts. It shows that 78·8 per cent. of the cultivated area was manured, about 27 per cent. of the area was benefited by fertilizers, about 78 per cent. of the area under paddy which is the major crop accounting for about 68 per cent. of the total cultivated area in the District received fertilizers and other manures, sugarcane was cent. per cent. manured, tobacco received manuring for 93 per cent. of the area and 70 per cent. of the area under fruits, vegetables and spices was manured. Such survey leads to valuable information on the basis of which further planning can be done. The Indian Council of Agricultural Research has approved a bigger scheme to investigate into the fertilizers and other farming practices in the country, and it is necessary that the scheme should be implemented without any further delay.

9.19. Compared with other Asian countries like China and Japan, the fertility of our soils is at a low level resulting in lower yields. This is because we do not pay as much attention to the production and use of bulky manures on the farms as the others do. There is also scope for larger consumption of chemical fertilizers. An all-out effort is needed to conserve and utilize all available manurial resources in the country and use larger quantities of chemical fertilizers in increasing the food production.

Soil Improvement.

9.20. Besides promoting a more intensive and scientific use of manure and fertilizers, the Chinese authorities are encouraging a number of other measures, such as terracing, strip cropping, soil conservation rotations, etc. for improving the soil. Inspite of the intensive use of animal manure and night soil made by the Chinese farmers, the soils in China generally lack organic matter. This is because land has been used most intensively in China throughout the ages. Morever on account of shortage of fuel, most of the farmers cut the stalks and leaves of crops to serve as fuel. This is specially true in the wheat belt along the Tsinling Mountains and in the Huai River Valley where the farmers not only cut the stalks and leaves of crops but also pull out the roots. The Technique Popularisation Stations are therefore inducing the farmers to make compost of straws, grasses etc., as much as possible and are also encouraging the planting of crops like common medic in provinces in the north west and astragalus and vicia in the provinces south of the Yangse river with a view to improving the soil.

Rotations.

9.21. Suitable crop rotations have been developed in China on the basis of soil type, topography and climate and are being prescribed widely with a view to improving the soil. These rotations naturally vary from locality to locality in accordance with the character of land, climate, etc. Some of the principal crop rotations in different agricultural regions may be briefly described here. A single crop system is in general practice in the areas where spring wheat is commonly grown and where winters are severe and moisture is a limiting factor. By winter following, soil moisture is accumulated and is sufficient in the average season to grow a satisfactory crop. Crops suitable for this one crop system with winter fallow are spring wheat, millet and Irish potatoes. Although the soil here is generally as suitable to the growing of two crops a year—including a green manure crop—as are soils in other areas, the climate with its cold and long winter and low rainfall, preclude such an use. In the winter wheat-millet region, in certain parts such as in Shansi a five year rotation is followed which includes winter wheat, winter fallow, kaoliang, soyabeans or black beans and millet. The order of this rotation system is as follows:

Year	Winter	Summer
1st	Winter wheat	Soyabeans
2nd	Fallow	Kaoliang
3rd	Winter wheat	Soyabeans or black beans
4th	Fallow	Millet
5th	Fallow	Kaoliang

In some places, kaoliang may be replaced by millet. This system includes three winter fallows, two crop legumes and five crops of cereals. It makes good use of winter fallow periods for water accumulation, adds nitrogen by the use of legume, requires a variety of plant nutrients, and utilises a larger root feeding area by the differences in root distribution of the several crops. Although ferti lity cannot be maintained by scch a system without some supplementary treatment such as chemical fertilizers, night soil, etc. it reduces the loss of soil fertility to a minimum and tends to make the best use of the natural resources of the soil. In the winter wheat-kaoliang region, a six year rotation is followed which consists of winter wheat followed in order by soyabeans or green beans, winter fallow, kaoliang, wheat, millet, winter fallow, green beans, wheat and sweet potatoes. In sandy soils, peanuts replace soyabeans in the cropping system. In this region from Chengting in Hopei southward along the Peking Hankow railway line to Chi Hsien, American cotton is an important crop usually under well irrigation. It is planted in late April and harvested in September, leaving the land fallow in winter. Millet or black beans are planted in May and harvested in August. This crop is followed by wheat. After wheat, millet or black beans are grown in the third summer and the land lies fallow in the winter for planting cotton in the following spring. In this three year rotation, two winter fallows and one legume crop are included to maintain the soil in fairly good condition. Two of the many rotations of central rice region in China are:

(1) One year rotation in which astragalus sinensis is grown in winter and rice in summer.

(2) Two-year rotation in which, in the first year as tragalus is grown in winter and rice in summer and in the second year wheat, barley or rape seed are raised in winter and rice in summer.

This two year rotation can be expanded in a longer rotation by growing different crops in winter. In the rotation used in the rice growing regions of Central China, astragalus is grown as a soil improver. The vegetative portion of the crop may be cut and carried to other fields to be ploughed under, it may be fed to hogs or it may be used for composting. Astragalus roots and residues are ploughed under in preparation of the land for paddy. Stable manure, night soil and in limited areas ammonium sulphate are used for fertilising paddy. Larger quantities are applied on paddy lands not growing a previous crop of legume. When winter wheat follows paddy it may receive an application of night soil or ammonium sulphate in early spring.

Inter-cropping.

9.22. Another system of improving soil fertility is the adoption of a system of inter-cropping. It is a common practice in Szechuan, Kansu and some other provinces. Usually a tall crop such as maize and kaoliang is planted with low growing crops such as soyabeans and the low crop grows vigorously after the tall crop has been harvested. Soil erosion is greatly reduced by this practice. Peas, lentils and beans are included in North China and beans and vetches in South and Central China for rotation. Inter-cropping with spring maize and early potatoes grown in alternate rows is also practised in some areas.

Manurial requirements.

9.23. As regards the manurial requirements of different soils in China, the position is briefly as follows:—

Generally speaking, as to geographical distribution, the soil of farm lands north of the Huai River and the Tsinling mountains needs nitrogen, that in the Yangtze valley and south western and south eastern provinces needs nitrogen and phosphate and the Yellow earth prevailing in Kwangsi and Kweichow provinces needs not only nitrogen and phosphate but also potash. Much work remains to be done to prepare suitable manurial schedules for the guildance of cultivators on the basis of soil type and crop grown. But now that there is a country wide extension organization, this information can be collected in course of time by conducting field tests on the cooperative farms. Academia Sinica has been working on the improvement of Laterite and Red Earth in Kiangsi provinces to improve their fertility. Work is also in progress with alkaline soils to increase their fertility. Some land reclamation work has been done by drainage of saline lands on which irrigated cotton is being grown. Similarly in the vicinity of Tientsin—Teinku in Hopei in several areas in the north east considerable area has been reclaimed for growing rice. Action is also being taken to build ditches and flood-diversion canals, strengthen dykes and embankments and take other measures to prevent floods and water-logging.

Multiplication and distribution of improved seeds.

9.24. The multiplication of improved seeds is another method by which the Chinese authorities are trying to step up agricultural production. The various improved seeds are evolved at the Regional Agricultural Scientific Research Institutes and the State Experimental Farms and they are then multiplied on a large scale in selected state and cooperative farms and distributed through the supply and marketing cooperative societies. In the Ministry of Agriculture at the centre there is a Seed Bureau which has under it the following four departments:

(1) Variety Inspection Department.
(2) Improved Seed Extension Department.
(3) Improved Seed Multiplication Department.
(4) Seed Inspection Office.

Every province in China has a research institute and an experimental station which are responsible for the testing of varieties considered suitable for different areas in the provinces. The Variety Inspection Department of the Central Ministry of Agriculture has to arrange for the supply of improved seeds for experimental work, inspect how the experimental work is carried out and analyse the results of experiments carried out over a number of years with a view to deciding which areas should grow particular varieties of improved seeds. The function of the improved Seed Extension Department is to plan the extension of improved seeds, select and store improved seeds for distribution to cooperative farms and educate the cooperative farmers how to select and store improved seeds. The Improved Seed Multiplication Department is in charge of the improved seed multiplication stations and is responsible for planning the multiplication of improved seeds in the whole country and training the cooperative farmers to undertake the multiplication of improved seeds in reserved areas in their own farms. The Seed Inspection Office is responsible for developing techniques for inspecting seeds and for testing their germination, purity, moisture content, weight, etc. So far, 800 seed testing stations have been established in China and there are plans for establishing more than 2,000 so that ultimately there would be one seed station for each county.

9.25. Before promoting the wide-spread use of improved seeds which have proved their worth in a certain area or which have been successfully grown by scientific institutions or imported from abroad, a certain amount of preparatory work such as expert appraisal, experimental planting and demonstrations to the peasants are generally carried out. On the basis of the information thus obtained steps are taken for multiplication and distribution of the improved seeds. The improved seeds evolved by the breeder are multiplied on the Government Experimental Farms. These seeds are multiplied in the following year in the Seed Multiplication Stations. Next year the produce of these stations is passed on to the cooperative farms which earmark a separate area for growing this improved seed. The produce of this area in the following year is then sown on the entire area of the cooperative farms. We were told that in the case of a self-fertilized crop, the fresh seed from the original seed multiplication farm is replaced only after 7 or 8 years while for crops where fertilization is high, for example, in the case of cotton, the seed is replaced after four years. In 1955, 20 per cent. of the total area under food crops and 30 per cent. of the total area under cotton was under improved seeds. It is proposed to cover the entire area under cotton by improved seeds within the next two to

three years while in the case of foodgrains, it will take a few years more before the area can be so covered.

Multiple cropping.

9.26. One of the methods for increasing agricultural production which is being given a very high priority by the Chinese authorities is the extension of multiple cropping areas. Technique Popularisation Stations are making a special effort to instruct the farmer regarding the possibility of growing two or more crops in a land where only one crop has been grown hitherto. This is one field which has been neglected so far in India and where we can profit a good deal by the Chinese experience. As has already been mentioned earlier, China has at present a gross sown area of 373 million acres which is 134 per cent. of their net sown area as against 326 million acres in India which is only 103 per cent. of the net sown area in India. This means that the Chinese are growing a much larger number of crops in the same area than we are doing in India. The Chinese authorities told us that multiple cropping usually increases the yield of paddy by about 1,000 to 1,300 lbs. per acre. An example of how the area under multiple crops is being increased in China may be given with reference to the Chekiang province. The main crop in this province is paddy. Out of 5·5 million acres of cultivated land, paddy is being grown over four million acres. Cultivators now follow the cropping methods noted below to facilitate multiple cropping:

(1) Growing of late rice which is transplanted by the middle of May and harvested by the end of October and following it in winter by such crops as wheat, barley, rape, astragalus etc.

(2) Growing medium rice crop which is transplanted in early May and harvested by the end of September and following it by winter crops as stated in (1) above.

(3) Growing early rice crop which is transplanted by the end of April and harvested by middle of July, following it with late crop of paddy which can be transplanted towards the end of July and harvested in early November and thereafter raising winter crop of wheat, barley, rape etc.

(4) Growing early paddy, following it after harvest with autumn crops such as maize, soyabeans, millets, sweet potatoes etc. and raising the third crop either of wheat, barley or rape.

It will thus be seen that in the Chekiang province where formerly only two crops used to be raised during the year, farmers are now raising three crops.

Scope for double cropping in India.

9.26. One of the methods for increasing agricultural ing the area under double or multiple cropping. Irrigation resources that are being developed would further add

to such areas where double cropping is possible. It is a common practice in certain areas in India to follow double cropping in paddy lands under assured rainfall conditions. But determined drive is necessary to increase this area and such causes as damage from cattle grazing due to letting the cattle loose after the harvest of paddy crops can be overcome by education and collective action by the peasants. In Madras, cotton is now being grown in between the two paddy crops in suitable areas. Similarly in irrigated areas it is now possible to grow wheat or other winter crop after early maturing variety of American cottons recently introduced. Experiments have also shown that double cropping with jute and paddy under low land conditions and double and triple cropping under mid-land condition is practicable. With jute as an early additional crop to the two crops of paddy in a double or triple cropping programme for *aman* paddy area, sowing of jute has to be completed as early as possible. Keeping the date of transplanting of paddy the same, jute has to be harvested irrespective of its stage of maturity by the end of July or so *i.e.*, about 5 to 7 days before transplanting paddy. In many areas where wheat is a single winter crop grown, it is possible to grow early maturing legumes like *moong* and cow-peas during the kharif season as catch crops before the sowing of the main winter crop, as is done in U.P. Similarly gram can be raised after the harvest of the groundnut crop in the cotton tract if seasonal rains are received. The cultivators are aware of these practices but are not adopting them on a large scale. It is necessary to find out the causes and see how this practice can be encouraged. In irrigated areas, it is also necessary to investigate if it is more economical to raise a single crop of late paddy in a year instead of raising medium variety of paddy and follow it by crops like wheat, peas etc. In many areas in India, especially areas which have been newly irrigated, multiple cropping is not being practised to the extent possible. This is a short-coming which should be corrected as early as possible and State Governments and the extension workers should take the same vigorous action in this direction as is being done in China.

Substitution of low-yielding grain crops by high-yielding crops.

9.28. Another way in which the Chinese authorities are trying to increase their food production is by enlarging the acreage under high yielding crops like paddy maize, potatoes, sweet potatoes, etc., in place of low yielding crops like wheat, coarse grains, etc. It is their experience that the yield of paddy per acre is nearly three times that of wheat. Yield of maize is about 50 per cent more than that of other coarse grains. If planted with potatoes or sweet potatoes, yield per acre is five to six times more than if planted with cereals. As regards food value, about 2½ units by weight of these crops are equivalent to one unit of grain. The cultivators are accordingly

advised to replace suitable areas of coarse grains and other low yielding crops by such high yielding crops as potatoes including sweet potatoes, maize or rice depending upon local conditions. The research stations are busy developing high grade strains of potatoes and sweet potatoes and working out methods of preserving, storing and processing such crops.

Scope in India.

9.29. There is in our view considerable scope in India for producing such high-yielding crops in place of low yielding crops. There was, some years back, a campaign launched for growing of such non-cereal crops. It is true that food habits of the people change slowly; but even so it should be possible to make some headway in this direction. Some of the areas under lesser millets such as *kodon* and *kutki* can be brought under early paddy if cultivators in such areas concert them into paddy lands by construction of bunds. Necessary loans need to be made available for this purpose. Tapioca is extensively grown in Travancore and some areas in the South. Techniques for its proper utilization, storage, processing etc. needs to be developed. There is considerable scope for increasing area under potatoes which should be fully exploited. Definite targets need to be fixed for each area, taking into consideration the local factors.

Improving farming methods.

9.30. Apart from the use of improved seeds, irrigation, organic and chemical fertilizers, proper rotations, etc., there are various other cultural operations such as preparation of seed bed, proper seed rates and spacing, interculture etc., which increase the output per acre. Special emphasis is laid in China on deep ploughing and close planting. Deep ploughing by the use of improved ploughs is estimated to raise the yield by 10 to 20 per cent and in some crops by 25 to 30 per cent. Similarly, we were told by some experts that "close planting" tends to increase yields by some 20 per cent in the case of paddy in certain areas. One of the vice-Ministers, however, told us that close planting has not in practice proved to be successful for all areas and all crops.

Improved techniques of paddy cultivation.

9.31. The improved technique of raising paddy crop that is being advocated in China may be illustrated by the following example from the Chekiang province. Cultivators are advised to give deep ploughing in autumn. Subsequently, one or two ploughings are recommended. During ploughing the turned up soil by different furrows should meet and no gap should be left. The first ploughing is usually done when the soil is dry. Land is irrigated after first ploughing and the second ploughing is given when the water is still standing. This helps to kill the paddy stem borer which is a serious pest in this as also in the other rice growing areas. In marshy wet land

winter ploughing is given and the land is exposed to sunshine. Deep ploughing on a limited scale is being done by newly established Tractor Stations in these areas. Improved paddy seeds suitable for the particular tracts have been evolved and are being recommended to the cultivators. Selection of superior seeds for raising of nursery is done by resorting to the following steps. (i) Seeds are exposed to sunshine for two days. (ii) Seeds are dipped in salt solution of about 20 per cent concentration and those remaining floating on surface are discarded (iii) Seeds are then steeped in sodium bi-carbonate solution of 48 per cent strength for two days. This is considered to make the young shoots being stronger. (iv) Seeds are then put in a basket covered with hay and warm water at 80°F is poured over the hay twice daily for two or three days. When the young shoots are about 3 mm. in length they are ready for sowing into a nursery. In the nursery bed, the main point is to reduce the density of the seed. The seeds should not be planted too close. Previously the peasants used to sow about 200 'catties' (1339 lbs. per acre) of seeds per 'mou'. Now the recommendation is to use about 100 'catties' per 'mou' (669 lbs. per acre). One 'mou' of seed nursery is sufficient to plant 20 to 30 'mou'. Much stronger seedlings are obtained by adopting this technique as compared to the old method. Transplanting is done after the seedlings are about 25 days old. The land is prepared as usual. The seedlings are planted close with lesser number of seedlings per bunch. Previously, the cultivators used wider spacing and larger number of seedlings per bunch but the extent varied from region to region in the province. About 5,000 to 10,000 bunches with six to ten seedlings per bunch used to be planted. According to the recent experiment, the standard is to plant about 16,000 bunches per 'mou' with about six seedlings per bunch. In practice, this number varies according to the soil type. The spacing is usually $7\frac{1}{2}'' \times 7\frac{1}{2}''$. In the central region of the province where the soil is not so productive about 10,000 bunches are planted per 'mou'. Before transplanting, one thousand 'catties' of animal manure or two thousand 'catties' of mud from ponds or rivers, rich in organic matter, are added per 'mou'. Subsequent manuring consists of two or three top dressings with liquid night soil at the rate of 1,000 'catties' per 'mou' (6693 lbs. per acre) at each application or 5 to 10 'catties' (5·50 to 11 lbs.) of Ammonium Sulphate. Top dressing with fertilizer at the earing stage of the crop is considered very important. Interculture is done between the rows with small improved appliances by human labour and suitable irrigation is given.

9.32. The method of close planting is now being vigorously advocated in China and we were told that in 95 per cent. of the area sown in the Chekiang province, this method

has been adopted. We were told that the cultivators now plant single seedlings with two shoots per hole with a spacing of about 5½″×6½″ as against their previous method of planting 4 to 5 seedlings at a longer distance. The nursery beds are usually manured at the rate of 200 'catties' per mou (1339 lbs. per acre) of green manure compost or night soil. Five to ten 'catties' (5·5 to 11 lbs.) of chemical fertiliser such as Ammonium Sulphate is also added about four days before the seedlings are dipped in the solution of ammonium sulphate before transplanting.

Japanese method of paddy cultivation in India.

9.33. The method of close planting now advocated in China is just the opposite of the Japanese method of paddy cultivation which has recently become popular in India. Although higher yields have been reported from all quarters, as a result of the Japanese method some defects have also been observed in this method *viz.* that there is lodging and high percentage of unfilled grains. We feel in the light of the Chinese experiments that it would be desirable for our State Governments to take up detailed investigations by conducting experiments on cultivators' fields and to find out what modifications are needed in the Japanese method to suit local conditions. Spacing in between the plants in the same row and number of seedlings to be used in each bunch as also the requisite manurial doses and their time of application need to be worked out under different soil and climatic conditions. Some work in this direction has no boubt been done by the States under the auspices of the Indian Council of Agricultural Research; but the experiments so far conducted are few and far between and State Governments should, therefore, work out the details of this method suiting the different tracts.

9.34. Deep ploughing and closer planting are recommended for practically all crops in China. American cotton in Hopei province is given a spacing of 10½″ to 12″ between plants and about 19 3/4″ between rows which is much less than that adopted for American cotton in India. Topping of cotton is a common practice adopted in China but the work done in India does not show any special advantage from this practice. It may be worthwhile to carry out some further research work in India in regard to this question.

Experience of best farms.

9.35. Apart from carrying out research in improved farming practices, the Chinese authorities are collecting detailed information about the experiences of the best farmers in raising crop yields. These experiences are studied and given wide publicity. The various provincial and municipal authorities are required to publish at least one book in a year summing up the experience of the successful farmers. Besides this, Conference of model peasants are called at regular intervals at different levels, visits are arranged by groups of farmers to model farms, and agricultural exhibitions are organised where the improved farming methods are demonstrated and awards are given to farmers

who distinguish themselves in increasing production. These campaigns for emulation and exchange of experience are given a very high priority in China's agricultural extension work.

Control of insects, pests, plant diseases, etc.

9.36. A vigorous campaign for combating plant diseases, insect pests, destructive birds and animals and undertaking plant protection measures is a very important feature of the Chinese programme for increasing agricultural production. The Technique Popularisation Stations give advice to the farmers in regard to control measures against pests and diseases. Whenever a crop disease pest is reported, experts from these stations visit the farms and give necessary advice and also short-term training to the farmers. The co-operative farms usually keep themselves equipped with plant protection appliances and insecticides and pesticides. In case of need, they get loan for the purpose from the Agriculture Bank or the Co-operative Credit Societies. The appliances, insecticides, etc., are usually obtained from the supply and marketing societies. We were told that in 1956, it was proposed to supply about 200 thousand tons of insecticides and pesticides and 4·33 million sprayers and dusters. When we were in Peking an International Conference on Plant Protection was being held there. Accounts were given and documentary films were shown how Chinese farmers were being organised to take action against various enemies of crops. As in other fields the main feature of China's work in this field also was the adoption of relatively simple techniques but implementing them on a mass scale by organising the farmers as it were into a number of brigades. An essential part of this drive is the popular campaign against the "four evils", rats, sparrows, flies and mosquitoes. Even small boys are being taught to regard it a patriotic duty to kill these pests. Even before Liberation, there were not many birds and wild animals left in China since the Chinese would eat many of them. But today the number is much less. In fact, during our tour in China we could not see any sparrow or crow.

Introduction of improved Agricultural implements.

9.37. In China considerable emphasis is being put on the improvement of agricultural tools and implements. The Chinese authorities feel that in view of the heavy pressure of population on land the scope for large-scale mechanization will be limited during the next decade or two. Although they are making use of tractors and large-scale machines where these can be utilised with advantage and have set up a certain number of machine tractor stations, mechanised farms, etc., they recognise that bulk of the Chinese farmers will have for a long time to come to depend upon human and animal driven agricultural implements. There are still many areas in China where even animal driven implements are scarce and agricultural operations are carried by implements operated by human

beings. In fact, in some places, we saw even women drawing ploughs and carts. The process of improving farm technology in China is, therefore, not only from animal power to mechanical power as in India but also from human power to animal power as well as from animal power to mechanical power. The Chinese authorities are, therefore, at present putting a very high priority on the improvement of agricultural implements operated by human and animal power and their introduction on a large-scale. There is an Agricultural Implements Popularisation Department in the Central Ministry of Agriculture which has its counterpart in the Provincial Departments of Agriculture as well as the County Departments of Agriculture. The staff of this Department often go out into the villages and maintain liaison between the research workers and manufacturers of agricultural implements on the one hand and the farmers on the other. They collect information about the short-comings of the existing implements and the improvements that are required, try out improved implements developed by experts in China and in other countries and give necessary advice to the manufacturers of agricultural implements regarding possible and desirable improvements. When a new implement evolved by the agricultural scientists is found to be satisfactory after test, this Department gets it manufactured on a large scale and then proceeds to popularise it through the Provincial and County Agricultural Implements Popularisation Departments as also the Technique Popularisation Stations. The Chinese experts with whom we had discussions, expressed great interest in the agricultural implements developed in India and in Japan. They are now introducing on a very large scale certain improved types of sullage cutters, water wheels, maize hullers, rice threshers and double wheel ploughs which have been evolved by the Chinese engineers. Some of these implements are not dis-similar to those which are in use in better farms in India and Japan and some of the countries of eastern Europe but we felt that Japan has made much greater progress in the matter of developing improved farm tools. The prices at which these agricultural implements are being made available to the farmers in China seemed to be very reasonable. We saw a water wheel in Sian which being sold at a price of Rs. 200 and an equipment of that type will not cost less than Rs. 350 in India. Since there is no system of direct subsidy, it appeared that the Chinese Government factories which manufactured these water wheels were selling them at a specially concessional price. As has been explained earlier, these equipments are usually sold through the supply and marketing co-operative societies. But it is the responsibility of the Technique Popularisation Stations at the field level to introduce them to the farmers and organise necessary training courses. When it is decided that a particular improved equipment should be popularised in the country, the usual practice is to launch a special campaign. The field workers

of the Agriculture Departments and all the members of the Communist Party working in the villages undertake a vigorous propaganda amongst the farmers for the use of these implements. Demonstrations are arranged by the Technique Popularisation Stations and farmers are pressed to make use of these implements. As a result of these campaigns, considerable progress has been made in China in regard to the introduction of improved farm implements. For instance, in 1952 there were only 351 double-wheel double-share ploughs sold to farmers. In 1955, the number increased to 3,70,000. In 1956, it is proposed to sell as many as 14 lakhs of these ploughs to farmers. Similarly, in 1952 only 1,148 double wheel single share ploughs had been sold, the number increased to 46,400 in 1955 and the target for 1956 is 1,00,000. In 1952, 256 improved harrows had been sold, the number increased to 12,950 in 1955 and the target for 1956 is 36,120. The number of sowers sold has increased from 556 in 1952 to 19,090 in 1955 and the target for 1956 is 58,840. The number of improved inter-cultivation implements sold increased from 32,770 in 1952 to 72,770 in 1955. The number of harvesters increased from 997 in 1952 to 9,656 in 1955 and that of threshers increased from 1,753 in 1952 to 68,493 in 1955. There was, however, a tendency to introduce these improved implements more on the basis of a popular campaign than scientific extension. Cooperative farms had been formed in very large numbers. A great enthusiasm for improved implements had been created. The demand of the farmers had to be met as a matter of urgency and hence the new implements were introduced without proper experimentation to suit local conditions. This led to certain unfortunate results. In many cases, farmers were given implements which did not suit their requirements, and there was considerable disappointment. As has been mentioned in a previous chapter, Mr. Chou-en-Lai himself gave us the example of the double wheel double share plough. The Chinese Department of Agriculture have already sold one million ploughs to co-operative farms during the current year. But these ploughs are suitable only for certain areas—and not for areas where there is terrace cultivation or where there are water-logged paddy lands or where the ploughs have to be drawn by buffaloes. Hence many of these ploughs which were purchased by the farmers rather indiscriminately could not be used by them and in order to avoid demoralization, the State had to purchase back all such ploughs from the farmers who found it difficult to use them. The Chinese authorities have now realised the importance of carrying on adequate experiments in different localities and for different crops before recommending any implement to the farmers and there they have taken steps to strengthen their organisation for studying the performance of improved implements under different soil and climatic conditions.

9.38. In India, certain implements have been developed by our scientists which have not yet been introduced on a

large scale to the cultivators. Some progress has no doubt been achieved in regard to the use of steel ploughs, water lifting engines and pumps, threshers, winnowing fans and winnowers, cane crushers, fodder cutters, etc. But there is yet no effective organisation to follow up the modifications needed according to soil and climatic conditions. It is true that a survey of agricultural implements has been carried out under the auspices of Indian Council of Agricultral Research by different State Governments on the basis of which schemes for the improvement of agricultural implements are proposed to be drawn up. There is also a proposal to set up in the next five year Plan three or four testing stations for bullock drawn implements. Some of the States have also formed Agricultural Implements Advisory Committees consisting of agricultural engineers, agricultural experts, farmers and manufacturers and dealers of agricultural implements. But much more remains to be done in this field. There is a great need for the strengthening of the agricultural engineering sections at the State level and four large-scale demonstrations on the cultivators' fields, stocking of implements at suitable centres in the rural areas and making them available at prices within the reach of the cultivators as also ensuring adequate repairing facilities and supply of spare parts.

9.39. Although in China the major emphasis is being put on the use of improved agricultural implements as has been described above, certain experiments are also being carried out for the use of tractors and other heavy farm machinery. The Chinese authorities may not go the whole hog towards farm mechanisation, especially in areas which are now densely populated. But there are areas, especially in north-west China, which are sparsely populated and where farm mechanisation offers several advantages. Moreover, the Chinese authorities do not rule out farm mechanisation altogether. Since farm mechanisation reduces drudgery and also increases the efficiency and income of the farmers, they contemplate that even in China farms will have to be mechanised one day. Although that day may come only after a decade or two, the Chinese authorities are taking steps to introduce mechanised farming in selected areas. They have set up a number of mechanised State farms and also machine tractor stations in these areas.

State farms.

9.40. At present, the total area cultivated by State farms in China amounts to 2·2 million acres. It is expected that the area will go up to 2·8 million acres in 1957 and 23 million acres in 1967. All the State farms in China are not, however, mechanised. There are at present about 3,000 State farms and of these, only 140 are mechanised. The State farms, whether they are mechanised or not, usually serve as models of farming technique and management. They are used by the research institutes as experimental farms. They play an important role in the multiplication

of improved seeds and they are also used for the purpose of demonstration of improved techniques to farmers. Each mechanised State farm possesses its own tractors and other agricultural implements and is financed and managed entirely by the Government. Some of the State farms are of the same type as the Government farms in India and most of them have been equipped with machinery which have been obtained as gifts from Peoples' Democracies of eastern Europe. Mr. Chou-en-Lai told us that the cost of production in many of the State farms was higher than the cost of production in cooperative farms where only human or animal power was used. It appeared that Chinese authorities were not now very anxious to set up new State farms except where they are needed for experimental purposes or where the area has been newly reclaimed and poses difficult problems of colonization.

Machine Tractor Stations.

9.41. Some of the big collective farms which have been set up in China require the services of tractors and other heavy farm machinery. In order to provide this, a number of machine tractors stations have been set up. The total number of machine tractor stations increased from 11 in 1953 to 138 in 1955 and 152 by the end of May 1956. The target for 1957 is 194 when it is expected that these stations will have a total of 2,897 tractors (averaging 15 h.p.) serving an area of as much as 5·5 lakh acres. The working of a machine tractor station can be illustrated by describing the Nanyuan Machine Tractor Station which was visited by us. This station was established with 7 tractors in March, 1953. In August, 1956 when we visited this station, it had 73 tractors and had a programme of securing 16 more before the end of the year. The total staff amounted to 186. The area of operation of this station extended over 41 hsiangs and the maximum distance over which this station had to operate amounted to 40 miles. The station was under the charge of a Manager who had one Agronomist and one Mechanical Engineer to assist him. The station had a general repairing workshop which had a number of sections, *e.g.* assembly, manufacturing, electric, injectors experiments, black-smithy, welding, etc. Besides these, there were general administration sections in the station, *e.g.* accounting, supply, adjustment, general work, etc. The 73 tractors of the station were grouped into 19 brigades, each brigade having 3 to 7 tractors. Each brigade had a ful-time leader organiser, a statistician and an assistant leader who was a part-time driver. For each tractor, there was one chief of tractor and one driver. There were as many as 19 women drivers in this particular station. The tractors usually worked in two shifts each of 10 hours per day. The brigades were equipped with wireless telephone and a motor-cycle for communication and transport. For any difficulty reported concerning mechanical breakdown, the staff of the mechanical workshop went out with spare parts. There was no mobile workshop. Work was done at

the station itself and if any special type of repairs was required, the tractor was sent to one of the big workshops in the neighbourhood. The tractors were used for spring ploughing and sowing from about the 5th of October to 10th April; for summer harvesting, sowing and weeding from 10th June to 10th August and for autumn and winter ploughing and sowing from 10th September to 30th November. The rest of the year was used for the maintenance and overhauling of tractors. In 1955, the Nanyuan Tractor Station ploughed up 31,992 acres and the target of 1956 was 1,06,888 acres. The total expenditure incurred by the station was Rs. 5·2 lakhs in 1955 exclusive of capital cost. The percentage distribution of the expenditure was as under:

Fuel	45 per cent.
Repairs	25 per cent.
Managerial	9 per cent.
Miscellaneous	21 per cent.

The cost of operation had been gradually brought down from Rs. 26 per acre in 1953 to Rs. 16 per acre in 1955. The plan figure for 1956 was Rs. 13.3 per acre. Most of the tractors used in this station were from USSR, Czechoslovakia, Eastern Germany and Hungary. There were only three American tractors. The details of the tractors and equipment in the farm are given below:

Tractors

Country	Name of the tractor	D.B.H.P.	Number	Remarks
USSR	DT;	36	2	caterpillar type
	NATZE	32	3	
	KT;	24	1	
Germany	KS07	32	16	caterpillar type
Czechoslovakia	ZETOR 25-K;	15	11	wheel type
	ZETOR 35;	24	9	caterpillar type
Hungarian	SL5055	32	2	caterpillar type
	G 35	18	3	wheel type
	GS 35	18	23	
American	Ford	12	3	wheel type.

Implements

Five bottom ploughs	25
Four bottom ploughs	24
Three bottom ploughs	12
Two bottom ploughs	14
Rollers	8
Weeders	13
Disc harrows	9
Simple harrows	124 sets (there are three for one set)
Sowing machine—48 rows	12
24 rows	19

NOTE.—For DT54, there will be four seed drills each having 24 rows behind it.

9.42. All these tractor stations are under the Bureau of Agricultural Machinery in the Central Ministry of Agriculture which is also responsible for preparing long term plans for the establishment of tractor stations, making arrangements for the manufacture of tractors and ancillary equipment, organising tractor stations, making arrangements for the distribution of tractors agricultural machinery and spare parts, and training of tractor engineers and operators and encouraging and promoting research in the development of tractors and heavy agricultural machinery.

Water conservancy.

9.43. Apart from the measures described above for improving agricultural techniques, the Chinese authorities lay a very great emphasis on irrigation and drainage or what they call water conservancy. Water conservancy is nothing new in China. Some of the oldest systems of irrigation from rivers and reservoirs were developed in China about 2,000 years ago. The maintenance of soil fertility under irrigation for more than 20 centuries is a great accomplishment of the Chinese people. Some of the old irrigation works had, however, been neglected during the last few decades of political unrest. The present regime in China is making vigorous attempts for extending water conservancy projects as fast as possible. Works are in progress for the permanent control of the Huai river and four reservoirs are scheduled to be completed by 1957. Simultaneously, work is being carried on for controlling floods and water logging along the major tributaries of the Huai river. Similar work has also been started on the Yellow river. Dykes along both these rivers are being strengthened to bring them under permanent control. Preparations are also being made for harnessing other major rivers of which Yangtze river and its biggest tributary, the Han river, are the most important. A very great emphasis is also being put in China on small scale water conservancy projects *e.g.* digging of wells and ponds, the building of irrigation canals and dams, the harnessing of small rivers and water and soil conservation works to be carried out by local Governments and Agricultural Producers' Cooperatives. Under-ground water resources are also being developed on a large scale in North China. In China an irrigation project which covers more than 10,000 mous or about 1,700 acres is classified as a major project and anything smaller than that is classified as a minor project. We were told that since Liberation they had built more than 300 major projects and about 10 million minor projects *e.g.*, dykes, canals, tanks, etc. Wells alone numbered 5·6 millions. The net irrigated area in China has increased from 50 million acres in 1949 to 64·5 million acres in 1955. Of this, more than 80 per cent is represented by minor projects. In 1956, it is proposed to bring under irrigation about 27 million acres of land.

9.44. Major water conservancy schemes in China are undertaken by the Ministry of Water Conservancy and its counterparts at the provincial level. There are special institutes under this Ministry for research and survey. For major river valley projects, special commissions are also set up under the Ministry. Minor projects are undertaken mostly by the cooperative farms and local authorities. Technical guidance is given by the Provincial Departments of Agriculture and Water Conservancy. If the cooperatives find any difficulty regarding finance, loans are made available according to need. The members of the cooperatives who work on these minor projects are usually paid by the cooperatives themselves on the basis of work points. The wages of technicians who may be recruited from outside and the cost of the equipment may be met through loans taken from Government. These loans are usually for three to five years. In deserving cases, the Government also gives subsidies. In each county, there is a section of water conservancy, the staff of which varies between 3 to 8 depending upon the extent of work. This section gives technical advice and other assistance to the cooperatives for minor water conservancy works. Targets for irrigation are fixed from above. Survey of ground water resources is carried out and technical help rendered by the water conservancy organisation at the various levels. The progress in irrigation is thus a joint effort from the State above and peasants and the Agricultural Producers' Cooperatives from below. There is no betterment levy in China for irrigation projects. In the case of major irrigation works undertaken by the Government, however, a water rate is charged for covering the cost of maintenance of the works and are based usually either on

(a) area irrigated, or

(b) production obtained, or

(c) water consumed.

In North-east China where the water rates are on the basis of output, they are usually about 7 per cent of the produce.

9.45. In the case of life irrigation, the sources of power for lifting are usually human or animal. In some cases, diesel engines are also used. There is very little of rural electrification yet in China. A large number of water wheels have been manufactured and distributed to the farmers at a very low price. About one acre of land can be irrigated by these wheels, the price of which is about Rs. 200. During the First Five Year Plan, it is proposed to supply the farmers with 681,000 of such wheels.

9.46. The experts of the Water Conservancy Section at the County as also those of the Technique Popularisation Stations give all necessary assistance to the farmers. In

particular, they give advice with regard to the frequency and amount of irrigation for different crops. This is a service which is proving very useful to the Chinese farmers. In India we have not yet got adequate information regarding amount and frequency of irrigation to be given to different crops as also the suitable cropping pattern for manitaining soil fertility. It is desirable that experiments should be conducted on a larger scale than is being done at present on this subject so that technicians and extension workers are armed with necessary data to advise the cultivators in irrigated tracts. This will help in the utilisation of water in the best possible manner for crop production.

Soil and water conservation.

9.47. In China considerable emphasis is also being put on what they call soil and water conservation. This can be best illustrated by giving an account of the work that is being done in the Shensi Province which we visited. In this province, on the basis of the research work done in soil conservation, large scale soil conservation and extension work has been taken up since 1954. Soil conservation plans are drawn up for cooperative farms. The administrative work is done at the Provincial level by the Bureau of Water and Soil Conservation, and at the County level by the Bureau of Agriculture, Forestry & Water Conservancy. The Shensi Province have five Soil Conservation Stations with a staff of about 100 persons at each station This staff work in close collaboration with the cooperative farmers and attend to soil conservation work in the small river valley and catchment areas. As regards the method of soil conservation, the treatment varies from area to area in accordance with the local climate, cropping pattern, topography, etc. Terracing of sloping lands is a common feature of soil conservation work in the Shensi Province. The terrace interval depends upon the nature of the slope and of the soil. It may vary from 33 ft. to 100 ft. Ridges are constructed at these intervals and raised every year as the soil accumulates. The dimension of the ridge depends upon the slope. At the top the width of the ridge may be about 18 inches. Special types of ploughs are used for cultivating terrace lands. We were told that terracing helps to increase yields by about 13 to 15 per cent. In the northern part of the Shensi province where water erosion is serious, special rotations are followed. These rotations are:

(1) Three years of millet or maize; one year soya-bean or other beans and two years of kaoliang (sorghum);

(2) Strip cropping of a close planted crop like wheat and alfalfa with crops like kaoliang and potatoes. Generally speaking, the strip may be of 65 to 100 ft. width.

(3) In central parts of Shensi Province, alfalfa is grown in dry lands and the rotation followed is three years

alfalfa, three years wheat and one year peas followed by two years of wheat. But between three years of wheat and peas some cultivators can also grow millet or maize;

(4) In irrigated lands where cotton is grown, a five-year rotation is followed. Cotton is grown for three years and in the third year, after the harvest of the cotton crop, wheat is grown in the same year. Cotton is sown in April and harvested by the end of September. Wheat is sown in October after the cotton harvest in the third year and is harvested by the end of May. In the fourth year, summer maize is sown in the middle of June and is harvested by the third week of September. In the 5th year, winter wheat is grown which is followed by summer black bean, sown in early June and harvested in October;

(5) Rotation for paddy fields is two years paddy followed by one year of wheat or rape seed or vetches. Rice is sown in early April in nursery, transplanted by the middle of May and harvested during the second fortnight of September; and

(6) In the southern part of the Province, maize intercropped with spring beans is raised for three years after which the land is left fallow for one or two years. Rainfall in such tracts is about 20 inches. Fallowing is necessary because of low fertility of soil. Where soil is fertile the crops grown are maize intercropped with beans followed by wheat.

Dry Farming Techniques.

9.48. In the northern and central parts of Shensi province where annual rainfall is 12 to 20 inches, one of the main problems is the conservation of rain water, most of which is received in autumn. Here dry farming techniques are followed. Autumn ploughing is given the depth of about 7 inches. Ploughing is done in the month of November except for cotton when the ploughing is done in October. Subsequent operations consist of harrowing of sloping lands only. In central as well as in the northern parts of the Province where wheat is grown, preparation of the land consist of shallow ploughing of about 4 inches immediately after the harvest of the wheat crop followed by deep ploughing of about 7 inches after about a fortnight. In individual cases, ploughing to a depth of 11 inches is also given. This is followed after a month by shallow ploughing or harrowing to keep up the moisture. In the northern parts of Shensi Province, stubbles of kaoliang are allowed to remain in the field which help to hold up the snow.

Shelter belts.

9.49. Apart from these methods large scale afforestation work and planting of shelter belts are being undertaken in China with a view to promoting soil and water conservation. Throughout our trip in China, we saw trees being

planted on road sides and across the fields. We were told that there was a special campaign for the planting of trees and people not only from the farm but also from the cities go periodically to help in this work. Soil and water conservation is a very important problem in China and a number of experiments are being made there. Unfortunately, we did not have time to study these methods in any detail. We feel that it will be useful if a team went to China to make a special study of the soil and water conservation methods being followed there, especially the dry farming techniques.

Reclamation of virgin and waste lands.

9.50. As has been mentioned in an earlier chapter, the distribution of population and cultivated area in China is a very peculiar one, most of these being concentrated in the south-east. The north-west is mostly barren and uncultivated. This has led to a widespread belief that there is considerable scope for land reclamation in China. Some of the experts, not only Chinese but also foreigners, believe that in China it will be possible to double the total cultivated area by reclamation. In fact, some of the Chinese authorities themselves told us that 250 million acres of land which is barren at present can be reclaimed and brought under cultivation. In the First Five Year Plan of China, however, the target is modest. The aim is to reclaim 6·4 million acres of land partly by organising peasants to reclaim small patches of waste land near village sites and partly by using machines to reclaim large blocks of barren lands. In the south-eastern areas of China which are very densely populated, every bit of land, which can possibly be cultivated, is being cultivated. By ploughing up, however, of some land which is at present being used as family graveyard or by a rational planning of residences, etc. in cooperative forms it may be possible to get some additional land for cultivation in these parts but the scope of that cannot be very much. There is greater scope no doubt in north-western regions specially in areas which are easily accessible. But as Mr. Chou-en-Lai himself mentioned to us, there is a limit to that set by the difficulties of communications, of colonization and of cost. Besides, the effect of reclamation on soil erosion has also to be borne in mind. Any reclamation which may accentuate soil erosion cannot be desirable from the long-term point of view although it may give some additional production in the near future. This does not, however, mean that there is no scope whatever for the extension of cultivated area in China. Small extension of cultivated area by individual farmers in the village site itself is certainly possible and it may total up to a considerable figure too. In fact, between 1952 and 1955 the total cultivated area in China has gone up from 267 million acres to 272 million acres and most of it has been brought under cultivation by small farmers near the existing village sites. More of such reclamation will certainly be undertaken in

future and there will be also possibility of some extension of cultivation in the north-western regions of China. It is, however, extremely doubtful if it will be really desirable, even if it were feasible, to carry reclamation to the extent that is now being advocated by certain Chinese authorities. Reclamation cannot only be costly but also harmful in the long run unless very carefully planned. China will have, therefore, to depend primarily on intensive cultivation measures for increasing her agricultural production and solving her food problem. These measures have been enumerated in Chapter V and some details of the more important of these measures have also been explained in the present Chapter. It will be seen that there is nothing very novel about any of these measures. All of them have been tried in one form or the other in India also. But the main characteristic of China is that whatever is being done there is being done on a very massive scale and with much greater drive than in India. If in India we want to increase agricultural production at the same rate at which the Chinese people are proposing to do, we shall have to implement various technical measures on the same massive scale as the Chinese are doing. This requires, on the one hand, a much larger technical set-up for research, extension, supplies and credit. In addition, it requires the same mobilization of non-official effort as has been done in China. Technical measures can be developed by research institutes. They can be taken to the farmers' fields by the extension agency; credit and supplies may be made available to the farmers so as to make it possible for them to adopt the measures recommended. But it is not enough to bring water to the horse The horse must have a will to drink it. That will can be created no doubt to some extent by the official extension agency but official agencies have also their obvious limitations. The non-official agencies of the country especially the political and social organisations have to take a much greater hand in it than has been done hitherto. Although in some areas of India, farmers are diligent and keen to adopt new techniques, it must be admitted that in many areas they are apathetic and much less hard working compared to the Chinese farmers. Our peasantry as a whole is not working hard enough nor is it always keen to work efficiently and adopt improved techniques. It is only our popular leaders and popular parties who can effectively revitalise our peasants and unless they do so we are bound to lag behind. On the other hand, if a mass enthusiasm is created by non-official workers and there are no extension agencies to follow up or supplies and credit are inadequate, there may be also serious frustration. It is, therefore, very important that some organization like Technique Popularisation Stations of China should be set up at the block level in our national extension areas. These stations should not be multi-purpose agencies but should be technical agencies devoted only to

agricultural extension work. These agencies should not also be burdened with the work regarding supply and credit. For supply and credit a separate organisation should be set up because it is our experience in India and that is also what we learnt from our visit to China that agricultural extension work requires whole-time attention and if it is tagged on to other work, the extension work invariably suffers.

CHAPTER X

RESEARCH, EDUCATION AND TRAINING

High Priority for Research

10.1. In China, a very great emphasis is being put on research and on training of technical personnel. It is recognized that these two are the very basis of technical progress. The First-Five-Year Plan of China gives a very high priority to research. "Efforts must be made", it says, "in this five-year period to lay a firmer foundation for Scientific Research, to improve the work of rallying the scientists together, to establish closer contacts between scientific research organizations and related departments, to improve scientific research and experimental work, to sum up constantly new scientific and technical experience, to master the latest achievements in Soviet science and technique, to promote step by step investigation and study of the national conditions of our country, its natural resources and social conditions and to raise stage by stage the level of research work in the fundamental branches of the natural science and in social sciences".

Academia Sinica.

10.2. The Chinese Academy of Sciences—*Academia Sinica*—has been entrusted with the work of promoting and co-ordinating scientific research work in China. The Academy has under it at present 46 Research Institutes as against 23 in 1952. It is proposed to increase the number to 51 in 1957. The total number of research personnel in these 46 institutes is now about 4,000 as against 1,200 in 1952. The Academy has prepared a National Plan for the promotion of Scientific Research and has selected 11 fields to which particular attention will be paid during the First Five Year Plan period. The Academy gives necessary financial assistance to the various Universities and Colleges for promoting research work. It has under it a Science Publishing House which publishes 72 periodicals besides a number of scientific progress reports, pamphlets, etc. 43 of these periodicals are devoted to publishing original contributions made by Chinese scientists in various branches of science. The Academy has also a scientific abstract and translation service. Besides this Academy, there are a number of Scientific Societies *e.g.*, Societies of Agronomy, Entomology, Plant Pathology, Animal Husbandry and Veterinary, Agricultural Mechanization, Water Conservancy, Soil Survey, etc. These societies also publish their own scientific journals. For the co-ordination of the research work relating to various agricultural sciences, it is proposed to establish shortly in Peking a Chinese Academy of Agricultural Sciences. This Agricultural Academy would be doing the same sort of work in the field of agricultural sciences as the

Academia Sinica is at present doing in the field of general sciences. The Academy of Agricultural Sciences will control the existing research organizations in agriculture and will also set up specialized research institutes, *e.g.*, of Agricultural Plant, Soils and Fertilizers, Plant Protection, Agricultural Mechanization etc.

Regional Agricultural Research Institutes.

10.3. At present there are 7 Regional Agricultural Research Institutes and 5 Specialized Agricultural Research Institutes in China. The former are:

(1) The East China Agricultural Scientific Research Institute, Nanking.

(2) The North China Agricultural Scientific Research Institute, Peking.

(3) The North-Eastern Agricultural Scientific Research Institute, Kirin.

(4) The Central Agricultural Scientific Research Institute, Hankow.

(5) The North-West Agricultural Scientific Research Institute, Wuking.

(6) The South-West Agricultural Scientific Research Institute, Chunking.

(7) The South China Agricultural Scientific Research Institute, Canton.

The 5 Special Agricultural Institutes are for—

(a) Sericulture.

(b) Farm implements.

(c) Tropical Plants.

(d) Animal Husbandry.

(e) Veterinary.

At present, there are no specialised institutes for crops. Crops are generally looked after by the regional institutes. The proposed new Institute on Agricultural Plants, to be set up by the Academy of Agricultural Sciences, will pay special attention to such crops as are not covered by the Regional Research Institutes. Besides these major research institutes, there are 154 research stations and experimental farms maintained by different provinces and autonomous regions. Each province has a few agricultural experimental farms to serve different tracts of the province. For example, there are six experimental farms in the Kwangtung province, 5 in Kwangsi and 4 in the Shansi province. These experimental farms in the provinces are under the administrative control of the Provincial Government but are under the technical control of the Agricultural Scientific Research Institutes of that Region.

10.4. We visited the North China Agricultural Scientific Research Institute, Peking and South China Agricultural Scientific Research Institute, Canton. The North

China Institute serves the four provinces of Shantung, Honan, Hopei and Shansi. The important crops of this region are winter wheat, cotton, millet, maize and sweet potatoes. Studies are being conducted in this Institute on these crops and also on Jute. The Institute has a number of divisions *e.g.*,

(1) Agronomy, including breeding as well as agronomic work on the important crops of the region.
(2) Agricultural chemistry including study of soils and fertilizers and chemical insecticides.
(3) Horticulture including fruits and vegetables.
(4) Plant genetics and physiology.
(5) Plant Protection including pathology, entomology, and bioassay for detecting toxity of insecticides.
(6) Animal Husbandry.
(7) Biology.
(8) Veterinary Science.
(9) Manufacture of biological medicines.

Besides, it has a special section which studies the physical properties of soil as affected by cultivation by mechanical means and soil moisture under conditions of different treatments on different crops. Research workers of this section work in the villages, at tractor stations and on co-operative farms and make observations on root development of crops, study moisture variations and analyse the soils in the laboratory for physical and chemical properties as affected by the treatments. There is also another section which studies agricultural meteorology with special reference to micro-climate and a third section which prepares models of animals, plants, insects, etc. for purposes of education and propaganda. There is also a unit for translating scientific works. The total technical staff of the Institute consists of about 260 members. The area of the experimental farm attached to the institute is about 170 acres. In the South China Agricultural Scientific Research Institute which serves the two provinces of Kwantung and Kwangsi, there are 11 departments *viz*:

(1) Food crops *e.g.*, rice, seed potatoes, etc.
(2) Economic crops *e.g.*, sugarcane, jute, peanuts etc.
(3) Agricultural Chemistry including soils and fertilizers.
(4) Plant Pathology including entomology.
(5) Silk Worm.
(6) Horticulture.
(7) Animal Husbandry and Veterinary.
(8) Farm Implements.
(9) Agricultural Meteorology.

(10) Agricultural Economics.

(11) Plant Physiology.

The total technical staff of this institute consists of about 170 members. The area of the farm attached to this Institute, is 150 acres. The Organization of the other Regional Institutes is more or less similar. The standard varies considerably because some of the institutes have been only recently established. The standard of the better institutes is comparable with that of the Research Institutes maintained by our State Governments but will not come up to the standard of our Central Institutes.

Committee of Scientific Coordination.

10.5. Pending the establishment of the Academy of Agricultural Sciences, a National Committee of Scientific Co-ordination has been set up for co-ordinating agricultural scientific research. This Committee consists of about 40 members drawn from the senior staff of Research Institutes, specialists from the *Academia Sinica* and scientists from Universities. This Committee approves the programme of work submitted by the Agricultural Scientific Research Institutes and also discusses various scientific problems relating to agriculture. Evaluation of research work done at the Institutes is also carried out by this Committee. Prior to the setting up of this Committee, co-ordination was affected by the Bureau of Agricultural Propagation and Propaganda in the Ministry of Agriculture through meetings arranged with workers of different institutes. The programme of work at the Research Institutes is usually drawn up on the basis of concrete problems of the regions suggested by the Provinces. These problems are brought out at the meeting held each year, sometime in February, in the Capital of the respective Provinces, at which are represented the agricultural producers' co-operatives, model progressive farmers and eminent technicians and scientists in the field. These meetings usually last for about 15 days and there is a very detailed discussion of various problems. Similarly, the Ministry of Agriculture convenes meetings of research workers on special problems such as cotton, wheat etc., and the recommendations made at these meetings, are taken note of and passed on to the Research Institutes for necessary action. The Agricultural Ministry also calls from time to time national conferences of agricultural workers—technical cadres, experts from colleges and research institutes, model farmers and specialists. These conferences usually last from 10 days to 2 weeks. The members report on the work done and express their personal points of view frankly so that the Government can take note of them in laying down the policies and programmes for Research. The local research stations and experimental farms in the Provinces also organize annual meetings to summarize their work and discuss problems that may arise in regard to particular

crops. After these local meetings, the technical staff of the Provinces meet annually at the Regional Agricultural Scientific Research Institute for the purpose of exchanging views. At such meetings, the scientific workers in different fields *e.g.*, Plant Protection, Agricultural Chemistry, Agronomy etc., working on the particular crop under discussion are also invited to be present.

Liaison between research workers and farmers.

10.6. Actual liaison between the research workers and the farmers is maintained by the Agricultural Scientific Research Institutes through sending out their research workers to the villages. These research cadres usually work with the co-operatives and stay at particular "points" selected specially for the purpose. One such "point" may include more than one co-operative farm. These cadres usually remain in the co-operative farm right from the sowing to the harvesting of the crop. From their headquarters at one "point", they often visit other "points". Simple tests such as varietal and fertilizer trials are conducted in agreement with the co-operatives. These research cadres also participate in the extension meetings arranged by the various Technique Popularization Stations of the area. The Technique Popularization Stations, in their turn, contact the nearest scientific workers in the field whenever any problem crops up which they themselves cannot tackle. On such occasions, research workers have frequently to study the problem on the spot and give their recommendations. This arrangement, we were told, ensures a very close contact between research, extension and field workers. Agricultural research work in China thus remains very close to the soil and has an essentially practical bias.

10.7. China has obtained the services of a number of Russian Agricultural Scientists on loan for assisting her in developing the pragramme of research in the field of agriculture. Delegates are being sent to attend scientific conferences which may be arranged by Peoples' Democracies or other friendly countries. When we were in Peking, a very large Conference on Plant Protection attended by delegates from all the Peoples' Democracies was being held there. This conference seemed to be very well organized and well-attended. Such conferences provide an opportunity for the junior scientific workers to come in contact with experienced scientists from other countries. Quite a large number of research workers are sent by China to other countries especially to U.S.S.R., and this not only helps exchange of scientific information but also helps considerably the development of Chinese research standards.

10.8. In the North China Agricultural Scientific Research Institute, we found quite interesting research work being carried on for the breeding of rust resistant varieties of wheat which are also able to stand shattering and lodging.

These varieties are good yielders too. Yellow rust is one of the main problems of China although stem-rust is also there. Some of the improved varieties are 188-5, 672, 187 and 497, Pima I and Pima IV which are resistant to yellow rust and have stiff straw. They are not, however, hardy. The Chinese experts have developed other varieties, *viz.*, 96, 918, 403 etc. which are intermediate between compactum and vulgare and are also rust resistant. American variety, namely, Early Premium which has been developed there, is found to be resistant to all the three rusts. We felt that it would be worthwhile to get samples of some of these varieties for trial and breeding in India. On the agronomy side, we found interesting investigations being carried out on the effect of winter watering, amount and frequency of irrigation, water requirements of wheat and suitable crop rotations. On the basis of these studies, the institute has recommended that only one winter irrigation of about 2½" of standing water need be given. If, however, the autumn is wet, even this winter irrigation may not be necessary. We feel that we in India could profit by more intensive research work on the amount and frequency of irrigation and on crop rotations. Several varieties of cotton have been developed of which mention may be made of Long staple 1, Long staple 2, Ambassador Stone Ville No. 4, No. 5-A, No. 103, No. 58, No. 6, and No. 40. No. 103 is of staple length of 26 to 28 mm. and ginning percentage of 32 to 40 and gives 40 counts. No. 58 is of staple length of 32 to 34 mm. with a ginning percentage of 36 and gives 60 counts. No. 6 has a staple length of 25 mm. with ginning percentage of 34 and is a very heavy early maturing crop. No. 40 has 25·2 mm. with a ginning percentage of 32 but is a very high yielder. We feel that some of these improved varieties may prove to be of interest to us and it will be desirable to obtain some samples for trial and breeding in India. Several improved varieties of peanuts with high oil percentage have also been envolved by the Institute. One of the varieties is Changli. We were told that seed of this variety was supplied sometime back to Coimbatore. It would be interesting to watch the performance of this variety in India. It would be perhaps useful to try this variety at different centres and also to use it as one of the parents for breeding material. A number of crosses between Chinese and Japanese sweet potatoes have been evolved in the research institutes and these give very high yields. The important hybirds are Hopei 117 and 166. It will be desirable to secure samples of these improved varieties for trial in India. Improved varieties of millets *e.g.*, 61 and bipa, cabbage and cucumber have been developed which also deserve to be tried in India. Considerable research work is also being carried out on fruits, *e.g.*, peaches. The problem in China is to develop varieties of peaches which will mature at an early date say by the end of July. A disc shaped variety of peaches has been evolved which is

said to be not only a good yielder, but has a better taste too. The work that is being done in regard to soil survey and investigations on acidic and alkaline soil is also very interesting. On the whole, we found that agricultural research in China has made fairly good progress during the last few years although it has still to make up a long leeway. Although in regard to fundamental research work some of Indian Research Institutes must be considered to be better, the Chinese research institutes are much more close to the soil and their work is very intimately connected with the day to day work of the farmer. The relations between the Chinese research worker and the extension worker and the close contact which the research worker has to maintain with the farmer are worthy of emulation in India.

Need for trained personnel.

10.9. The programme for development of agriculture as also for promotion of agricultural research requires a very large number of trained personnel at various levels. China has therefore launched a very large programme of agricultural education and training. Agricultural education in China can be broadly divided into five categories:

(1) Higher education.
(2) Agricultural middle schools.
(3) Training of co-operative cadres.
(4) Training of technical workers.
(5) Training of cadres in their spare time.

Higher agricultural education.

10.10. All the institutes of higher agricultural education in China are controlled by the Ministry of Higher Education. Altogether, there are 29 colleges of agriculture and forestry in the country with a total teaching staff of 3000 inclusive of professors, instructors, etc. and 17000 students. The capacity of these colleges is proposed to be expanded very considerably. They will admit 15,000 new students this autumn and 20,000 in the autumn of 1957. With the total planned enrolment, it is expected that the number of students would go up to 37,200 at the end of the First Five Year Plan. The output of agricultural graduates last summer was 3,400. It is expected to be about over 6,000 next year and 8,000 by 1959. The total number of students who are expected to graduate from these colleges during the five year period 1953-57 is 18,800.

10.11. The students admitted to the agricultural colleges are drawn from amongst the graduates of middle schools, secondary agricultural schools and also from amongst the cadres working in administration, business and agricultural organizations having necessary cultural and political background. All students to be admitted have to pass an entrance examination. This entrance examination is fairly stiff and eliminates the unfit so that the percentage of failures amongst those who are admitted is negligible.

10.12. Up to 1954, all the students admitted to agricultural colleges were given studentships, the value of which was about Rs. 24 per month. The students who were formerly cadres working in Government or other organizations, were given studentships of Rs. 64 per month, the actual amount depending on their grade. During the period of studentship, however, they are not entitled to draw their pay from their parent organization. Since 1954, however, the studentship has been made flexible and is determined according to requirements of the individual cases. No tuition fee is charged from the students.

10.13. The course for agricultural graduates is at present of four-years' duration. There is, however, the proposal to increase it to five years. Specialised courses are given in—

(1) Agronomy.
(2) Horticulture.
(3) Agricultural Chemistry.
(4) Livestock breeding and animal husbandry.
(5) Veterinary science.
(6) Sericulture.
(7) Tea.
(8) Agricultural Economics.
(9) Agricultural Mechanization.
(10) Agricultural Water Conservancy.
(11) Plant Protection.
(12) Land Use Planning and Farm Management.

It is proposed to set up more specialised courses in the future as the need for them develops. The general course includes the common lessons *e.g.*, mathematics, physics, chemistry, certain basic technical lessons with special emphasis on agricultural problems and specialised lessons on the different special courses. Common lessons are given to all the students in the first year. The basic technical lessons are given in the first and second year, and the specialised course begins from the second year. Emphasis is given on practical training alongside theoretical training on the farms and laboratories attached to the colleges. In the last two years of the course, practical training is given on State farms or co-operative farms and students are required to go through the whole process of agricultural production. Four months are exclusively reserved for this work in the last year of the course. Students are examined at the end of each college term and also at the end of the final year. Not more than five subjects are to be offered at a time so that the burden on the students may not be too great. The percentage of failure is very small, usually 1 to 2 per cent. and in no case more than 5 per cent.

10.14. Most of the professors and other teachers in these colleges do undertake research work under the guidance of the research institutes. They constitute the main research force in China. There is a close relationship between the research workers in the *Academia Sinica* and the research workers in the Agricultural institutes and colleges. It is felt in China that no professor can do his job well unless he spends some time in research work and, hence, in arranging the teaching programme, care is taken that there is a proper balance between teaching and research work.

Secondary agricultural education.

10.15. As a result of the rapid development of agricultural co-operatives since the latter part of 1955, a great shortage of agricultural technicians is being felt. Large scale measures have, therefore, been taken to expand facilities for secondary agricultural education. By the end of 1955, there were 94 secondary schools of agricultural education with 44,000 students and the teaching staff of 3,500. On an average, there were three to four such secondary schools in each Province. Kwangtung province has as many as 9 such schools. Most of the existing 94 schools are being expanded and 60 new schools are proposed to be established later in 1956. During the year 1956, about 8,000 students graduated from the secondary agricultural schools. The number of enrolment in 1956 was 70,000 as against 44,000 in 1955. It is expected to go up to 98,800 in 1957. The total number of students to be graduated from the Secondary Agricultural Schools during the Five-Year period 1953—57, is estimated 82,900.

10.16. Students who have passed through the Junior Middle Schools or persons who have got general education of that standard can apply for admission to Secondary Agricultural Schools. Most of the students come from peasant families and have a village background. The training lasts for three years and includes the following specialised course:

(1) Raising of Crops.
(2) Production of fruits and vegetables.
(3) Plant Protection.
(4) Animal Husbandry.
(5) Veterinary science.
(6) Sericulture.
(7) Tea.
(8) Agricultural Machinery.
(9) Agricultural Accountancy.
(10) Agricultural Statistics.

In these courses, relatively greater emphasis is put on practical training than in the agricultural colleges. Each

student is required to work for a certain minimum period in a farm during the period of training. The students are being given studentships of the value of Rs. 24 per month to defray their expenses on food. Besides training regular students, the secondary agricultural schools also organize short courses for the benefit of cadres actually working in co-operative farms.

10.17. In implementing their programme for expanding the existing secondary agricultural schools and starting new ones, the Chinese authorities are experiencing great difficulty in securing sufficient number of qualified teachers. They are trying to solve this problem by recruiting, for this purpose most of the new graduates from agricultural colleges and also drawing upon Government agricultural departments and institutions, although the latter are themselves short of staff. They have somehow managed during the current year but they envisage considerable difficulty during the next two or three years. There is a much greater demand for training facilities than the Government are able to provide even with this expansion programme. They are, therefore, arranging to provide refresher courses to the technical staff of Government departments, State farms, co-operative farms etc. For this purpose, more than 10 schools for training of technicians attached to State farms have been started. In addition, special courses of practical training are being arranged by rotation at different Technique Popularization Stations and on bigger co-operative farms. The Technique Popularization Stations had a staff of over 50,000 last year. In 1956, the number has become more than 100,000. For these personnel also, lectures and special courses are being arranged by the Provincial Agricultural Departments. The Technique Popularization Stations have trained, by May 1956, as many as 580,000 cadres of the co-operative farms. The trainees included directors of co-operative farms, accountants, agriculture and animal husbandry technicians, etc.

Training cooperative cadres.

10.18. Special schools for training co-operative cadres have also been started to give training of three to six months duration, depending upon the subject of specialization. In the current year, 83 such special schools are being set up and it is proposed to increase the number to 118 next year. It is estimated that 300 to 400 thousand cadres of co-operative societies will be trained next year and about 2 million cadres within a period of five years. The aim is to provide 4 to 5 trained cadres for each co-operative farm within a period of five years. In addition to this programme for the training of cadres of co-operative farms, there are also special institutions run by the Supply and Marketing co-operatives for the training of their staff. These co-operatives at present run the co-operative college, 30 co-operative schools and 33 short

term training courses on co-operative marketing. 72,000 people received training in various short term courses in 1955. In addition, spare time vocational study is strongly encouraged among the staff of these co-operatives. There are now 546 full time and 1,317 part-time teachers employed in 430 counties of 12 provinces who make regular lecturing tours of the lower level co-operative societies with a view to training their regular cadres. Besides this, correspondence courses are organized for such cadres as cannot attend even the short course or the part-time course.

Training of personnel for research work.

10.19. In addition to the training facilities described above, for agricultural cadres, extension workers etc., special facilities have been provided for the training of research personnel. The total number of scientific research personnel in the field of agriculture is at present 2,700 in the Senior Grade and 1,700 in the Junior Grade. According to the twelve-year programme for 1956—67, these numbers will go up to 29,000 in the Senior Grade and 15,000 in the Junior Grade. These personnel will work in agricultural research institutes both at the Centre and in the Provinces. There is, therefore, considerable need for training of personnel for this work. This function has been entrusted to the *Academia Sinica*. The Academy selects suitable agricultural graduates for higher training both in the country as well as abroad, sends experienced scientists on short visits to foreign countries and also arranges for the visit of eminent experts from foreign countries and organizes short-term seminars or training courses on specialized subjects. In the five-year period 1953—57, about 10,100 students will be sent abroad for study of whom 9,400 will go to the U.S.S.R. In addition, about 11,300 students will be sent to the U.S.S.R. and the Peoples' Democracies for practical training. Quite a large proportion of these scholars and trainees will specialise in subjects relating to agriculture and animal husbandry. All students who graduate from agricultural colleges or schools are assured of employment. In fact, even while the student is in the final year, a decision is taken as to where he will be posted on graduation so that there is no waste of time after a student graduates.

10.20. On the whole, we found that steps were being taken in China in a very big way for the development of research and for the training of technical personnel so necessary for national re-construction. The Chinese authorities emphasize that nothing is more valuable for the purpose of economic development than trained personnel and hence they are taking the greatest care to see that requisite number of technicians are trained well in time and that whoever has received training is not wasted even for a short period.

CHAPTER XI

CONCLUSIONS AND RECOMMENDATIONS

11.1. Our detailed comments regarding various aspects of agricultural planning and techniques in China have been given in the previous chapters and we do not think it is necessary to recapitulate them. We propose, therefore, to confine ourselves in this chapter to bringing out some of our main conclusions and recommendations and to preface them by a few general observations only.

11.2. From what we saw in China, it appears to us that she has not only been able to restore during the last seven years all the damage caused by a long period of civil war but has also exceeded the pre-war levels of production in many directions. It [illegible] of several important crops ma[illegible] figures of pre-war yields as given [illegible] others on the basis of sample sur[illegible] studies. But the over-all increase in agricultural production during the last seven years both by intensive cultivation and by extension of area under crops has been indeed considerable. It is significant that China has been able to create conditions which, given peace, are likely to make for a greater rate of progress in the future. In her First Five Year Plan, she had aimed at an increase of industrial production by 98·3 per cent. and of agricultural production by 23·3 per cent. over the base year, 1952. The Chinese authorities are of the view that most of these targets are likely to be over-fulfilled and hence, in the Second Five Year Plan, China would be aiming at increasing production at an even higher rate, *viz.*, by 100 per cent. in the field of industry and 35 per cent. in the field of agriculture over the base year, 1957.

11.3. It is important to note that the main emphasis in Chinese planning is on industrialisation, especially on the building of heavy industries. As China's First Five Year Plan puts it:

> "The purpose of adopting a positive policy of industrialization, that is, a policy which gives priority to the growth of heavy industry, is to provide a material basis on which to strengthen our national defence, meet the needs of the people and bring about the socialist transformation of our national economy. That is why, in drawing up the First Five Year Plan for Development of the National Economy, we emphasize heavy industrial capital

construction and centre our efforts in the first place on building the 156 projects which the Soviet Union is helping us to design; it is on this main groundwork that we shall continue to use, restrict and transform the capitalist sector of the national economy, and ensure the progressive consolidation and expansion of the socialist sector."

11.4. But while giving priority to the development of heavy industries, the Chinese authorities have taken care not to neglect other important sectors of the economy. The main principles which they have laid down in this regard deserve to be quoted in this context:

"Firstly, while giving priority to the development of heavy industry, it was laid down that efforts should be made to maintain a proper raito of development between the various branches of the economy—particularly between industry and agri-
c[illegible] industry and light indus-
tr[illegible] velopment being thrown
out

"Secondly, efforts should be made to adapt construction plans to the available funds, that is, to our investment capacity, and to give proper consideration to the question of technical personnel.

"Thirdly, local plans should be co-ordinated with those of the various ministries, and, with the central authorities co-ordinating and leading the work, ensure in the first place that major projects be built and at the same time bring the local initiative and creativeness into full play.

"Fourthly, measures should be taken in the course of construction to combine the rational utilization of the existing industrial bases with the energetic construction of new bases, so that the originally uneven economic development of our country can be corrected step by step and the geographical distribution of economic construction is gradually brought to suit the security needs of national defences.

"Fifthly, consideration should be given to both the accumulation of funds and improvement of the people's livelihood. That is, on the one hand we should pay due attention to increasing the rate of accumulation of funds for national construction so as to lay the material basis for a steady rise in the level of the people's standard of living; and, on the other hand, on the basis of increased production and productivity of labour, we should gradually improve the material well-being and cultural standard of the people and reduce un-employment."

11.5. From what we saw in China, we thought that the Chinese authorities had been able to achieve several of their objectives and China has today a much stronger economic base than could have been anticipated a few years ago. This base has enabled her to aim at a much more accelerated rate of progress during the Second Plan period in the field of both industry and agriculture. Although so far the bulk of China's requirements of agricultural requisites, *e.g.*, chemical fertilizers, insecticides and pesticides, agricultural machines, etc. have been imported, China's own production of these requisites is making rapid headway and helping considerably to increase agricultural production. There is no doubt that China has been helped to a considerable extent by the assistance, material as well as technical, that she is receiving from Soviet Russia and other countries of eastern Europe, assistance which the Chinese readily acknowledge and greatly value. It is, however, the drive and ability of the Chinese Government and the Communist Party and the labour and diligence of the Chinese people which constitute the two most important factors in the progress of China.

11.6. Provision of the necessary finance for agriculture, price policy, technical assistance, supply of producers' goods like fertilizers, etc. in accordance with the approved plan for production, and in some cases contracts for purchase of the produce at a pre-determined price and supply of requisites against that contract are the principal means through which the Chinese authorities are inducing Chinese farmers, now organised in producer's cooperatives, to conform to the national plan.

11.7. As a result of almost complete control by the State over the entire economy, China has been able to raise, within the country itself, very large resources for financing the Five Year Plan—mostly through profits of state-owned industrial and trade enterprises and taxes. The revenue raised by the state is much larger *per capita* in China than it is in India. These resources are employed in a concentrated manner, aspects such as production receiving special attention and the provision of many elementary amenities being left to local effort or being relegated to the future. These two features have considerable relevance when we consider the effort which we in India are putting forward. By and large, as has been suggested elsewhere in the report, in China, the total investment by the Government in agriculture is larger, agricultural loans are made available on a much greater scale and what may be described as 'private investment' is more effectively mobilised through cooperatives than in India. This means that a much larger supply per acre of chemical fertilizers, improved implements, good seeds and technical services and credit has been available to the Chinese farmer.

11.8. In China, the State purchases all the surplus produced by the farmers at pre-determined prices and there is a definite relationship established on an economic basis between the prices so fixed for competing crops. These prices are revised periodically according to changes in economic conditions, changes in the relative emphasis placed on the production of different crops and the incentives felt to be necessary for the attainment of planned targets. Conscious of the relative role assigned to peasants and industrial workers in the doctrines of Chinese communism as well as in the actual tasks of reconstruction, the authorities are careful to ensure that in respect of agricultural prices farmers are given sufficient incentives. We were told that between 1950 and 1955 purchase prices were increased by 15·7 per cent. for grains and 15 to 45 per cent. for hemp, silk, cocoon, tea, oilseeds and cotton. During this period, the index number of wholesale prices was however, kept at a more or less stable level. Farmers have been told that there will be a further increase in prices during the Second Five Year Plan period. Although, the problem of maintaining a stable or a minimum prices and offering an assured demand at a rising level of production is different in some ways in the conditions of a market economy from that in a controlled economy, our observations in China suggest that it is of the utmost importance in accordance with our own conditions also to ensure the fulfilment of these two desiderata of agricultural progress.

11.9. There is a large and fast expanding technical staff working in China for the development of agriculture. The Technique Popularisation Stations alone maintain a technical staff in rural areas which appeared to us to be much more intensive than the staff provided in India. These extension staff in China perform specialised tasks and are not multipurpose in character.

11.10. The agricultural extension structure in a country has two components, namely the services provided by the administration and those provided by non-official workers, cooperatives, etc. In both respects a comparison between China and India would suggest that, at present, a more intensive and on the whole a more adequate service is available to the Chinese farmer. Thus, the Technique Popularisation Stations, whose number is being steadily increased from year to year, can render more effective service than is possible for our block level agricultural and animal husbandry officers supported by multi-purpose village level workers each of whom covers an area of 10 villages. Secondly, the organisation of peasants into cooperatives has helped to train local semi-skilled cadres for different purposes within each cooperative, to multiply quickly the improved varieties of seed needed, to adapt technical improvements and to

utilise agricultural loans efficiently for production. As against this, the emphasis on cooperatives in India has not been sufficient and cooperative institutions at the village as well as higher levels are weak. The need for the strengthening of the cooperative structure in India is, however, well recognised and some steps are being taken. On the other hand, there is not yet sufficient appreciation of the fact that the national extension service pattern, while being basically sound, needs to be greatly strengthened if the results hoped for by way of increase in agricultural production are to be realised. This is necessary, in particular, in four directions:

(a) Besides the extension staff at the block level, there should be agricultural, animal husbandry and cooperative personnel at the level of a group of, say, 15 to 25 villages;

(b) The present jurisdiction of the multi-purpose village level workers, namely about 10 villages is, on the whole, too large for the purposes which we have in view. By training more workers we should try as early as possible to reduce the area of the village level worker by say, one-half.

(c) There is need for well-organised demonstration and training centres at the block level. These centres would provide services similar to those rendered by Technique Popularisation Stations in China. Further, in each block the demonstration centres at the block headquarters should be supported by smaller centres for demonstration, teaching and exchange of experience among farmers in each group of 15 to 25 villages. Such a group may also have a cooperative seed store and arrangements for the supply of fertilisers and agricultural accessories as well as more effective coordination between agricultural credit and marketing; and

(d) While a multi-purpose village level worker has much value as an extension agent working with peasants and cooperatives, the need for strong technical cadres at all levels in agriculture, animal husbandry etc., and for research and experiment on local problems should receive much greater recognition than at present.

11.11. There is a large programme in China for supplying materials like fertilizers, insecticides, good seeds, improved implements, etc., to agriculturists. For instance, the supply of chemical fertilisers has been increased from 3 lakh tons in 1952 to 17·3 lakh tons in 1956

as compared to 8 lakh tons in India. Besides this, a large volume of night soil, animal manure and green manure are used and these constitute a valuable feature of Chinese agriculture which impressed us. The supply of improved ploughs has been increased from 2·39 lakhs in 1952 to 15 lakhs in 1956. The Chinese have also a fairly large programme of irrigation and drainage. Between the years 1949 and 1955, they have brought about 14 million acres of additional land under irrigation. This has now expanded greatly because of the organisation of rural labour through cooperatives. The irrigation target of the First Five Year Plan which stood at 12 million acres has been already fulfilled more than twice over. Minor irrigation works in China, when supported by community labour, are completed at relatively lost costs. About 80% of the irrigation in China comes from small works.

11.12. The organisation of cooperatives is the key stone of the scheme of agricultural development in China. The State-cum-cooperative system of supply and marketing and the organisation of credit cooperatives have been described earlier in the report. The elimination of the merchant, the moneylender and the landlord together with the very small holdings created as a result of land reforms made the organisation of agricultural producers' cooperatives both urgent and essential. The Communist Party and its cadres at all levels have played a fundamental role in the organisation of producers' cooperatives as they did earlier in land reforms. They provide the core of the organised effort in every local community and in the future also the success or failure of cooperatives will turn largely on their performance, behaviour and leadership. In the detailed application of general ideas for the organisation of agricultural producers' cooperatives set out in model regulations framed at different stages by the Central Committee of the Communist Party, there is evidence of considerable local adaptation and adjustments having been made to suit local conditions. To a visitor from abroad, apart from statistics which may be provided, the visible tests of the effectiveness of cooperatives in China are the crops in the fields and the manner in which the labour force of the village is engaged in work. There is little doubt that on these tests as well as on the information furnished, the Chinese cooperatives are at present working successfully and, organisationally, conditions have been created for rapid progress in agriculture in the coming years.

11.13. Besides mobilising rural manpower for works of benefit to the entire community, cooperatives are developing cadres of local leaders, farm managers, accountants and other technicians. In each group of villages, men and women with a sense of responsibility and leadership,

the 'elites' as it were of a new society, are coming forward and are likely to prove of great assistance to the State in implementing future plans for rural development. There may be a view that in China the rural leaders lack flexibility and depend more on directions from the Party as well as from the Government than on their own initiative or on the support of the local people. If this occurred, they would not compare favourably with rural leaders in countries with a long history of economic development on democratic lines, and in the long run this may prove to be a serious handicap and may limit the degree of technical as well as social progress which is achieved by the rural population. But in the short period and for a country like China, which has so far been backward both economically and socially and which wants to make up the leeway as quickly as possible, there can be little doubt that the organisation of cooperative farms has proved to be an effective way of mobilising rural manpower and other resources and throwing up a number of local leaders. It is not unlikely that with the progress that is being made in China in adult education, the careful measurement of work points and frequent meetings and discussions which are a common feature of cooperative organisations, local sanctions and pulls may also be expected to develop in course of time.

11.14. The fact that in these cooperative farms all the manpower is organised through working teams and production brigades, each with its definite area to look after and its tasks prescribed and distributed between individuals and small groups, and that remuneration is directly related to the amount of the work done, means that the indolent and inefficient farmer cannot go his own way and has to put in hard work. Thus, the setting up of cooperative farms has, enabled China to mobilise and draw upon human and natural resources of the countryside in a much more effective way than might have been otherwise possible for her. It has also facilitated the implementation of crop plants effectively. It is claimed that the formation of cooperative farms has by itself, increased agricultural productivity by 15 to 20%. It is difficult to say how far this claim is correct because seasons have varied and cooperatives have not been at work for a sufficient period. But there can be no doubt that the organisation of millions of Chinese peasants into cooperative farms has enabled China to lift her agriculture from the ruts into which it had fallen and that cooperatives bear promise for the future. The Chinese, however, recognise the limitation of the successes they have achieved in this field and know that difficult problems lie ahead.

11.15. But behind this organisation of the Chinese farmers into cooperatives and the mobilisation of the resources of the entire nation, there is a force which should not be lost sight of. It is the Communist Party of China

which has 10·7 million well-organised, disciplined and hard-working members. It is the members of the Party working in the remotest villages who have brought about a fundamental change in the rural structure of China within a short period of seven years. It is also these party members who provide the necessary drive for increasing production and ensuring that the targets are fulfilled. There are writers on China who have spoken of the ruthlessness which might have marked the early phases of the new regime as a factor in the subsequent transformation from individual to cooperative cultivation. This may or may not be so, but we cannot comment on the suggestion from our own direct observations. But we should doubt if the effort and hard work which are now being put in by peasants could be attributed, to any appreciable extent, to force, compulsion and the like.

11.16. In Indian villages in areas where development programmes are undertaken and the right kind of leadership is forthcoming, there is perhaps more voluntary effort, local initiative and general awareness than we were able to observe in China. But what may be lacking in these directions appears to be more than made up through better organisation, fuller mobilisation of manpower resources for works benefiting the community as a whole, more hard work and, on the whole, a more concerned rural leadership. The need for our peasantry and our entire administrative machinery to work harder than at present cannot be too much stressed. A considerable part of the activity of the administrative machinery even in the districts is not to-day sufficiently constructive or development minded and in one way or other the ideals for which the administration and the country should be working all the time are not sufficiently kept in the forefront. Positive programmes of development which involve intensive effort among the people cannot be undertaken without the full support and participation and a sense of common purpose on the part of popular parties and popular leaders in each district. A democratic country which seeks to eliminate poverty has to evolve arrangements and conventions by which, over a large area, differences of political party or affiliation do not come in the way of cooperative community effort and, in the field of development, the administration can enjoy the support of all men with public spirit and goodwill. These conditions do not at present exist in sufficient degree. This is perhaps one of the two or three major lacunae in our conditions when compared to those which are making rapid progress possible in China.

11.17. The Indian Cooperative Delegation which has studied the working of cooperatives more fully than we have done will no doubt make its recommendations on this subject. The policy in respect of cooperative farming and the objective of cooperative village management have

been set out in our Second Five Year Plan. We have accepted the target that over a period of 10 years or so a substantial proportion of the agricultural land in India should be cultivated on cooperative lines. It may be that with the experience of cooperative farming in China, solutions of certain problems may become easier. We should profit from the Chinese experience and continue to study developments in China in this field, deriving such lessons as we can from their successes and failures. It will, however, be necessary for us to evolve our own solutions which fit better into our conditions as also democratic tradition and are in accord with the needs of our villages. The progress of cooperatives in India is likely to be more gradual than that in China, and we should expect an 'individual peasant' sector to continue along with a growing cooperative sector. For this there are good reasons, but this does not mean that the overall rate of agricultural development need be slower or that we should proceed with unnecessary hesitation towards the reorganisation of our rural economy in a democratic manner on cooperative lines. Cooperatives will certainly help agricultural development in many ways. But if we consider that the problem of landless labourers, which is acute in several parts of the country, may not be solved expeditiously except through cooperative village development, the organisation of agricultural producers' cooperatives assumes even greater urgency. Chinese experience shows that, given certain conditions, it is possible through cooperatives to organise rural manpower resources so as to ensure a high level of employment for all members of the community and not merely for those who happen to have fair sized agricultural holdings. This is significant for our future rural development.

11.18. The method of organisation had undoubtedly considerable bearing on the levels of agricultural production which may be reached, but organisation by itself can only make a limited amount of difference. Large increases in agricultural production come from technical reforms, such as, improved seeds and implements, the provision of fertilisers and insecticides, the utilisation of local manurial resources including night soil and the supply of credit, supported by efficient agencies for supply and marketing and competent administrative and technical services. In the course of this report, on the basis of our study and observations in China considered with reference to our knowledge of conditions in India, we have referred to a number of steps which would be useful and should enable us to increase our agricultural production at the desired rates. Our main recommendations may be set out briefly under three heads—(i) organisational measures, (ii) economic and financial measures and (iii) technical measures.

I. Organisational Measures

(*i*) *On the whole, in India progress in land reform in recent years has been relatively slow, especially in some States. We consider that the land reform programme set out in our Second Five Year Plan should be carried out speedily so as to create the conditions necessary for the rapid development of the agriculture.*

(*ii*) *Similarly the early implementation of proposals relating to co-operation in the Second Five Year Plan is essential. The building up of strong multi-purpose co-operatives is an important condition for the successful implementation of the agricultural production programme. In the National Extension and Community Development programmes, cooperation should be given the central place. A major test of progress in the N.E.S. and Community Development Blocks should be achievements in the development of genuine cooperatives through the voluntary participation by peasants. A bold programme of experiments in cooperative farming of different types should be organised, the details being worked out after the report of the Indian Cooperative Delegation to China has been received.*

(*iii*) *It would be useful to workers engaged in developing cooperative farming in India if accounts of individual agricultural producers' cooperatives in China which have been studied by members of the Agricultural and Cooperative Delegations are brought together as case studies in a single volume and made generally available.*

(*iv*) *The multi-purpose village level worker has, no doubt, considerable value as a means of reaching villagers. Emphasis on the role of the multi-purpose village level worker has, however, led to some neglect of the need to have strong technical cadres in agriculture, rural engineering, animal husbandry and cooperation at different levels. Technical functions in these fields have tended to be subordinated to administrative and other considerations. It is important that, within the general National Extension Service pattern, technical staffs should have specific responsibilities and should be assisted in discharging them fully.*

(*v*) *In addition to the technical extension service at the block level, there should be agricultural, animal husbandry and cooperative personnel also for each group of, say,* 15 *to* 25 *villages.*

(*vi*) *There should be well-organised demonstration and training centres at the block level rendering services similar to those performed by Technique Popularisation Stations in China. These centres at the block level should be supported by similar centres for demonstration, teaching and exchange of experience among farmers in each*

group of 15 to 25 villages. At this level, there should also be a cooperative seeds store and arrangement for the supply of fertilizers and agricultural accessories.

(vii) The agricultural extension staff at the block level should be strengthened by the addition of an engineer who will assist village cooperatives in working out schemes for minor irrigation, drainage and water and soil conservation which can be carried out with local participation and labour. There should also be a plant protection assistant.

(viii) For each group of 15 to 25 villages, there should be agricultural, animal husbandry and cooperative personnel.

(ix) The jurisdiction of the multi-purpose village level worker, which is now about 10 villages, should be reduced, possibly to about one-half and the training programme for village level workers should be stepped up accordingly.

(x) The programme of technical training for agricultural and animal husbandry personnel in the Second Five Year Plan should be reviewed with a view to substantial expansion being organised at an early date.

(xi) We should not feel unduly concerned if in the beginning the standards appear to fall somewhat as a result of this expansion. The inadequacy of training can be made up through in-service and part-time training. In-service training and short-term courses should be organised as a matter of normal practice for existing personnel as well.

(xii) As recommended in the Second Five Year Plan, every State should take early steps to enact suitable legislation so that in each area minimum standards of management and efficiency for cultivation can be prescribed. No one should have the right to mismanage land which is a scarce national asset. It is, therefore, essential that minimum standards of cultivation should be prescribed and enforced especially at the village level. The measures necessary for this purpose should be taken.

(xiii) In addition to setting targets of additional production potential for the country as a whole and for individual States as is being done at present, targets of yield per acre should be fixed by the local authorities concerned for individual districts, National Extension Blocks and villages. The local people and representative farmers should be closely associated with this work. The help of the best farmers in each area should be taken and they should be used as a cadre of non-official agricultural leaders for the purpose of helping farmers in the area to adopt better methods and reach higher targets.

(xiv) Awards and citations to farmers and to villages which do well in the agricultural production programme should be given. The exchange of visits by leading farmers, especially small peasants, exhibitions, discussion groups conferences, etc. should be organised as a regular feature in different localities. The experience of model farmers in increasing crop yields should be collected and made available by each State Government with a view to spreading the knowledge as widely and rapidly as possible.

(xv) Popular leader and popular parties, irrespective of the question of affiliation, should be urged to regard the rural community development, cooperation and agricultural production programmes as areas of common action. Popular parties should train their own non-official workers to work in villages along with panchayats, cooperatives and extension personnel. They can do much to supplement the efforts of village level workers and other government personnel and enable local institutions such as, panchayats and cooperatives to take over functions which now take up much of the time of the government personnel, thus leaving the latter free for the more specialised work.

(xvi) An important difference between Indian and Chinese agriculture is due to the fact that, on an average the Chinese peasant works much harder. Conditions should be created in which the bulk of farmers in India will work hard in the manner that only a small proportion do at present.

II. Economic and Financial Measures

(i) Cooperation in China could not have succeeded to the extent it has in its initial stages but for the liberal provision of short-term and medium-term agricultural loans through the agricultural bank and credit cooperatives. The targets for agricultural credit proposed tentatively in the Second Five Year Plan need to be revised upward in substantial measures and early steps should be taken to ensure an adequate provision of credit through cooperative channels whenever possible and through government agencies elsewhere. The administrative procedures relating to the grant of credit by cooperatives as well as by government agencies should be re-examined so that farmers can receive financial assistance within a week or at the most two weeks and without having to depend upon the favour of petty officials.

(ii) In the interest of agricultural production, it is essential that there should be guaranteed minimum prices for the principal agricultural crops such as foodgrains, cotton, jute, etc., with an assurance that the Government

would be prepared to purchase quantities offered at these prices. The minimum prices should be sufficient to induce farmers to put in increased doses of labour, fertilizers, insecticides, etc. and to use better seeds and better implements. Minimum prices for different agricultural products should be fixed in relation to one another and in such a manner that production is encouraged in accordance with the planned targets. In dealing with this most important issue, there need be no fear that price stabilization operations will be too risky for us. Like China our surplus is marginal, temporary and manageable. If China can handle this problem, there is no reason why we should not be able to do so. As long as our problem continues to be one of shortages and our main problem is to organise for increasing production, we should not be worried that the policy of price stabilisation will lead to over-production. Even when prices are temporarily stable or rising, an assurance regarding minimum prices is helpful as it allays the fear of an abnormal downward swing.

(iii) For the marketing of agricultural produce, co-operative institutions by themselves may not be sufficient. The principle of state partnership in cooperative marketing societies has been accepted already. It may be necessary, however, for the State to play a larger role in the organisation of rural supply and marketing than has been contemplated so far.

III. Technical Measures

(i) With increase in the area under irrigation, there should be targets in every State, district, etc. for area to be put under two or three crops during the year.

(ii) The multiplication and distribution of improved seeds should be given the highest priority so that during the period of the Second Plan, the areas under rice and wheat and as far as possible under millets, maize and other crops are brought under improved strains.

(iii) Research work on crops for which improved strains have not yet been evolved should be intensified in each State and for this purpose funds should be made available.

(iv) An all-out effort should be made to develop local manurial resources such as farm yard manure, night soil, composting and green manuring as well as the utilisation of chemical fertilisers on a much larger scale than at present. With the object of evolving cheap methods for deodorizing and disinfecting night soil so as to make it acceptable to Indian peasants, large scale pilot projects should be undertaken in every state.

(v) Manurial schedules should be worked out for each types of soils and crops. Experiments to study the effect of different types of fertilizers on the cultivators' fields should be undertaken.

(vi) Research on the usefulness of bacterial fertilisers under Indian conditions should be organised and the use of nodule bacteria for inoculating seeds of leguminous crops should be practised.

(vii) Advice to cultivators for the use of proper rotations on the basis of soil types and their economic needs should be provided.

(viii) Much greater attention than hitherto should be given to dry farming methods which have been found successful. These should be popularised and, as suggested earlier, adequate staff assistance should be made available to enable village communities to have their own dry farming and soil and water conservation programmes.

(ix) Planting of high yielding crops, such as, maize, potatoes, sweet potatoes and high yielding varieties of paddy should be encouraged. Investigations into the possibilities of developing the Japanese method of cultivation for potatoes should be carried out. Research in the economic of 'close planting' vis-a-vis the 'Japanese method' should be undertaken with reference to different crops and in different areas.

(x) The engineering sections of the agricultural departments of State Governments should be strengthened. Sufficient attention is not being given at present to the design of improved implements which our cultivators can afford to buy. Arrangements for the sale of improved implements and supply of spare parts and repair services have to be improved.

(xi) Village level workers should be provided with light plant protection, soil testing and soil temperature equipment.

(xii) Vigorous measures should be organised in each area for the destruction of pests and animals which destroy crops. Indiscriminate legislation passed recently by some States banning the slaughter of useless cattle should be reviewed.

(xiii) State Governments should strengthen their research organisations and increase their research staffs to meet the demand for improved agricultural techniques which has arisen and is likely to develop further in all areas.

(xiv) Arrangements for liaison between research and extension workers should be strengthened. Annual or half-yearly meetings should be held in the States between the senior research workers and the senior extension workers to discuss such problems as may require attention. The research staff should be given an opportunity to tour the villages and understand problems of the cultivators first-hand so as to take up research on problems which have a direct bearing on the needs and demands of the latter.

The extension workers should be put in direct touch with research workers in institutions in the neighbourhood. Instructions should be given that whenever the extension worker calls upon the research worker for consultation or requests the latter to accompany him to some farm, the latter should help to the maximum extent possible. The travelling and other costs incurred by the research worker for this purpose should be reimbursed by the Government.

(xv) Improved seeds and plant material should be imported from China for trial and breeding in India especially in regard to cotton, rice, groundnut and green manure seeds.

11.19. In conclusion, we would like to reiterate that the most important thing for us is to create conditions in our own country in which the average peasant will work much harder than at present, the manpower and other resources of each local community are more fully mobilised in the interest of all, the village community develops a quality of leadership and responsibility for the welfare of all its members, large numbers of non-official workers are drawn actively into the task of rural development and the administration can render effective service to the people. In some measure, each of these things is no doubt being done, but not enough, not together, and not in all places. The study of agricultural programmes in China has helped us to see our own programmes, institutions and administrative arrangements from a fresh angle, and we have tried to draw up a series of tentative conclusions and recommendations. They are generally in the nature of improvements on what we are already attempting and achieving and of steps related to the assessment of our own experience and the working of our own programmes under the First and the Second Five Year Plans, further reinforced by our study of Chinese experience and development. We must emphasize, however, that any measures that we may adopt for economic development or technical progress should be fully in accord with our democratic institutions.

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